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ORIGINAL COMMUNICATIONS.

THE TOXEMIA OF PREGNANCY.[1]

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This paper is presented to review, and if possible to simplify, the many so-called varieties of toxemia of pregnancy.

The forms thyroidal, placental, syncytial, breast, hepatic, nephritic, and intestinal should be regarded as different manifestations of the same disease rather than as the toxemias of pregnancy.

The pernicious nausea and vomiting of pregnancy will not be considered here, as this seems to be somewhat different in character—and besides, it does not end in eclampsia, which is the usual result of all the other so-called "varieties."

Toxemia is caused by the circulation in the blood of toxins due to a deranged metabolic process, each cell of the body discharging its effete products, which when carried to the liver should be changed, and then expelled by the organs of elimination.

This function, for some reason, is frequently not well performed in pregnancy. The cause for this failure is not definitely known; and whether the thyroid, the placenta, syncytial cells, or breast play an active part is hard to say, each having been considered as having some effect.

The last theory—that of the breast causation—is only suggestive, as the resulting good from the distention of the breast by oxygen is probably due rather to the curative effects of the oxygen than to stoppage of the liberation of poison from the breast.

The changes found in the liver and kidneys are due to the irritation of toxins, and are results rather than causes. There may be in pregnancy marked kidney changes, with the urine showing albumin and casts, without the presence of toxemia. This condition is not serious for the mother; but when the kidney change is caused by toxemia, the condition is very grave indeed.

It remains for the physiological chemists to isolate the definite toxins before the cause of toxemia will be certainly known.

The symptoms usually appear gradually, but may make a sudden onset, especially after exposure or indiscretion of diet. The first change will be in the urine, the urea dropping to less than one per cent, and specific gravity becoming lower. Following close upon this will come headache and digestive disturbances—indigestion, nausea, and possibly vomiting; restlessness, irritability, or general lassitude. The headaches will grow more severe, blood-pressure will be more than one hundred and fifty; and the urine will contain albumin, and later, casts. Following rapidly upon these symptoms will come substernal pains, spots before the eyes, blurred vision, unconsciousness, coma, and convulsions.

The urine of the pregnant patient should be examined every two weeks, or oftener if the patient has any headache or digestive disturbance. Take the specific gravity, and test for albumin, sugar, and urea. The Doremus urinometer has been found satisfactory. This method of examining urine can and should be employed by any physician attending a pregnant patient.

[1]Read before the Philadelphia County Medical Society, Feb. 11, 1914.

Should the symptoms be more marked the urine should be sent to a laboratory to ascertain the total nitrogen output. The above method has been employed in private and hospital practice for twenty years without one case of eclampsia.

The treatment is one of prevention. If the pregnant patient be carefully watched, properly instructed as to her mode of life, such as her diet, clothing, bathing, and exercise, and be cautioned to avoid constipation, there will be but few cases of toxemia, and probably none of eclampsia.

There are now about seven thousand five hundred cases of eclampsia occurring in the United States annually; surely this proportion could be reduced by proper care to less than one hundred, as has been proven by the prenatal work accomplished in some of the obstetrical clinics in Boston and New York.

With the advent of the first symptoms—that is, lowered urea, headache, and even slight digestive disturbance—place the patient on a milk diet, with plenty of water; and give calomel gr. 1/10, soda bicarb. gr. 1, three times daily. If necessary, give Epsom salts to relieve constipation. The calomel stimulates cell metabolism, decreases the toxins and promotes their elimination, as is shown by the increase in urea, and the higher specific gravity of the urine, with the disappearance of the symptoms within three or four days. If there is a tendency toward recurrence of these symptoms repeat the above, and then give thyroid extract, 1 grain, three times a day.

When the symptoms are more marked—such as albumin and casts in the urine, very severe headache, disturbances of vision, and high blood-pressure—then the treatment must be more active; absolute quiet and rest in bed is imperative, with a strict milk and water diet; calomel gr. ¼ and soda gr. 2 should be administered every hour until five doses have been given, this to be followed by Epsom salts. The bowels should be irrigated with normal salt solution, allowing as much as possible to remain. This should be made alkaline by the addition of one or two drachms of bicarbonate of soda. The elimination through the skin should be promoted by a hot bath or pack, and the blood-pressure reduced by veratrum viride, 5 to 10 minims, given hypodermically, repeated if necessary.

Should the patient fail to improve, or become worse after undergoing treatment, then the question of emptying the uterus must be considered. No one symptom will justify this procedure; it must be based on the general condition of the patient, steadily growing worse, as shown by nitrogen partition, high blood-pressure, increasing amount of albumin and casts, and eye changes.

THE SUCCESSFUL TREATMENT OF A CASE OF HEMOPHILIA NEONATORUM.[1]

BY P. J. COLLANDER, M.D., ASHTABULA, OHIO.

I saw my fourth case of hemophilia neonatorum last summer, and I was lucky enough to save it. The three others died.

I will not take up space by enumerating well-known facts concerning the causes, symptoms, and treatment of hemophilia neonatorum, or spontaneous hemorrhage of the new-born. In fact, we knew, until recently, much more of the symptoms than of the causes or any reliable treatment of the disease.

I saw the case on the evening of the 17th of July. The baby, a four days' old girl, had started to bleed from the rectum on the day before, and had bled profusely and almost continuously. She had not taken any nourishment at all since the bleeding began and looked emaciated.

I remembered having read a paper on treatment of infantile hemorrhage by subcutaneous injection of human blood serum and decided to try it now. I had at first some difficulty in getting the necessary quantity of blood, but persuaded the father to give it by declaring that it was simply a question of an old-fashioned bloodletting.

[1]Read before the Ashtabula County Medical Society, December, 1913.

I opened the cephalic vein in his arm and drew about 70 Cc. of blood. I waited about forty minutes, until the clot was formed and the serum was separated, and injected about 15 Cc. of the serum under the skin between the scapulæ. I saw the child again on the following morning, and the parents told me that the bleeding had considerably subsided, and that the baby had taken nourishment during the night. The baby looked better.

I had in the meantime read about treatment of infantile bleeding by a preparation of Parke, Davis & Co. named Coagulose. Though I was much encouraged by my first experience with human blood serum and prepared to renew it at any time, I was interested in coagulose too, and so decided to continue the treatment of my patient with coagulose. The procedure of administering the human blood serum is far from being complicated, but it cannot be denied that the use of the coagulating power of blood serum is simpler still by using it in the form of coagulose, which is obtained by precipitating the blood serum of the horse. It is a sterile, soluble, anhydrous powder containing the fibrin ferment for clotting the blood. It is claimed that even when administered in repeated doses it has not, in an experience of nearly two hundred cases thus far treated, caused any untoward symptoms. The method of using it is very simple: to the contents of one bulb is added 6 or 8 Cc. of sterile water, and the bulb is then vigorously shaken until all is dissolved. The injection is made subcutaneously and may be repeated several times, until the bleeding stops.

I return to the account of my case. I injected one bulb of coagulose on the morning of the 18th, and saw the baby again on the evening of the same day. I was told that the child in the meantime had three black movements and that it had taken nourishment (breast). I injected the second dose of coagulose. I saw my little patient again on the 19th, and the parents told me then that the baby had had only two black movements in twenty-four hours. I injected a third dose. The bleeding stopped entirely after that and the baby made a speedy recovery.

I have come to the conclusion that the time has passed when we were powerless in fighting hemophilia neonatorum. The disease has lost a great deal of its dread since the discovery has been made of a successful method of treatment with blood serum.

SYPHILITIC TESTS: A VIEW OF THEIR CLINICAL SIGNIFICANCE.

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For the diagnosis of syphilis there is today at the disposal of the laboratory the demonstration of the treponema pallida, inoculation of animals, Wassermann reaction of blood and spinal fluid, increased globulin and lymphocytosis of spinal fluid, increased resistance of red blood cells to hemolysins, and the Noguchi luetin reaction—all of value. The first two are decisive evidence of syphilis, but are applicable only in the early stages. In the obscure phases of the infection the Wassermann reaction is the most valuable diagnostic method. It is of the highest importance that the principles of this generally well-known technique be understood, especially as there is a tendency to overlook difficulties and sources of fallacy. Very interesting biological studies of the various reagents have been made, and there is a steady effort toward clear-cut standards of technique and reagents which will increase markedly the value of this already most accurate laboratory test. To-day the consensus of opinion is that a positive Wassermann reaction, excluding a few well-known exceptions—Yaws, Frambesia, Leprosy, and Scarlet Fever—means active syphilis. In 19,748 cases of syphilis collected from the most important papers, ignoring differences

of technique, 83.4 per cent reacted positively, 17,721 non-luetic cases gave only 1.4 per cent positive, while of serums from healthy people not one showed any inhibition.

Because of the protracted course, variable activities, and the frequent quiescent periods in this infection, differences in the reaction should be expected. The presence of the reaction represents the generalization of the infection. It appears at any time between the fifth day and sixth week after the chancre and increases in regularity and strength until modified by treatment. As a rule it comes on gradually and remains after all other symptoms are gone. Untreated secondary and congenital syphilis reacts positively in 96.4 per cent of the cases examined, while tertiary, including all localizations, results in only 81.1 per cent positives. At this later stage the reaction is almost indispensable, because the clinical signs are often less decisive. The loss of reaction at this time may be due to the restraining power of the body upon the propagation of the spirochætæ or upon the neutralization of the injurious products by the formation of antibodies, or possibly to the inability of the body to respond to the stimulus of the organism by the formation of that substance on which the Wassermann reaction depends. A few of the negative findings in this and in the latent periods can be changed to positive by the administration of a few large doses of mercury or a small injection of salvarsan—the so-called provocative test of Donath. This increase in strength of a complement fixation test after a dose of salvarsan was frequently reported by those studying the effect of salvarsan treatment upon the reaction. Many explanations of this phenomenon have been offered, but none are entirely satisfactory, nor has enough confirmatory work been published to determine its real importance. A small series of cases (42) which gave persistent negative reactions with the original Wassermann technique were examined simultaneously, using the Wassermann technique, the one unit modification, and the Noguchi technique, both before and after a provocative treatment. Of these 42 cases with clear-cut positive histories seven per cent of the negative reactions were changed to positive, while in seven cases without a history, although with suspicious clinical findings, not one reacted positively after the treatment.

The spinal fluid has not been as extensively studied as the blood, but the results have been generally uniform. According to the reports of Levaditi, Ravaut, Jamanouchi, Stetz, Browning, and others, a positive reaction means syphilis of the central nervous system and does not occur unless this system is involved. The infection may be confined solely to this system, or it may have associated with it lesions in other parts of the body, the more common combination being with the cardiovascular system, aortitis, aortic insufficiency, etc. In a nervous disease a positive result in the blood serum and in the spinal fluid means syphilis of the nervous system, but if only the blood is examined the result may mean syphilis of the nervous system or a nervous disease occurring in a latent syphilitic. This fact is a most valuable support for differential diagnosis.

Within the limits of nervous syphilis itself, certain combinations of laboratory findings have come to have diagnostic value. Thus the Neurological Institute formulate their findings—

Paresis.....	W. R. blood +	W. R. sp. fl. +	Globulin +	Cell count 5-30
Tabes.....	Usually + may be —	— or +	+	20-100
Cerebrospinal syphilis	Usually + may be —	— or +	+	100-1500

an observation similar to that made earlier by Plaut.[1] In tabes and cerebrospinal syphilis the substances which produce a Wassermann reaction are present in greater dilution than in the fluid of paresis. Hauptmann[2] and Henderson, Smith, and Candler[3] have proposed an intensive test. Their method differs from the original method only in increasing the amount of spinal

fluid used in the reaction. With their technique practically all cases of cerebral or spinal syphilis will give positive results.

In obscure conditions the Wassermann reactions cannot be replaced. Positive results have occurred in vague gastrointestinal, respiratory, cardiovascular, and nervous diseases; in neurasthenia, feebleminded, backward, and epileptic; and in cases of muscular rheumatism, sciatica, etc. While the positive findings are not frequent, they occur often enough to make the examination imperative. Moreover these positives occur when the chance of cure, arrest, or marked improvement is still possible, and appear in individuals giving negative or doubtful histories, with vague or only suggestive symptoms, and often with an absence of any local lesion. On the other hand, in conditions often suspected, or in suggestive cases, negative results occur, and later results give no reason to doubt the reliability of the negative. Holt lately reported a series of negative findings in congenital deformities and marasmic states. Banti cirrhosis so far has never been reported positive, although syphilis has always been considered in its etiology; likewise ozena has been positive in only a comparatively few cases

In the latent periods of syphilis with apparent health, the great value of the Wassermann reaction again cannot be overestimated, for on the true significance of this period hangs the ultimate safety of the individual. Among latent syphilitics must be included the families of infected persons, and those cases with a positive history but without any clinical signs of the disease. We examined 14 complete families of frank syphilitics, 7 families of tabetics, and 9 families of paretics, simultaneously with the original Wassermann technique, with the one unit complement and amboceptor technique, Noguchi technique, and Noguchi luetin tests, with results as follows: Positive reaction in 52 per cent, Wassermann reaction; 58 per cent, one unit; 58 per cent Noguchi; and 76 per cent positive with luetin test. The negative Wassermann in these cases is therefore of doubtful significance because of the varying percentage of results with different techniques, and with the luetin test. This last test, which so far as it has been tried out seems to be specific, is apparently of most value in these latent and treated cases.

Almost from the first demonstration of the various syphilitic tests they have been used to note the effect of treatment. The behavior of the reaction is to-day the most accurate indication of the effectiveness of treatment. In some individuals the reaction disappears after short courses of treatment, while in others it is only slightly modified by even vigorous treatment. Citron[4] was the first to study the effect of treatment, marking a loss of reaction in 16 per cent of his cases. The majority of the reports on salvarsan treatment are based on one injection. The most interesting are the quantitative study of 102 serum tests before and at weekly intervals after an injection of salvarsan, reported by Noguchi,[5] and Craig's[6] analysis of 225 cases, according to the stage of infection, intensity of reaction, and method of treatment. They found a definite reduction in the antibody content of the serum in every case injected, 33.7 per cent of the cases becoming negative and 19.8 per cent much weaker. Late cases yielded less readily clinically and serologically than early cases. Craig found that while 164 of his cases became negative after salvarsan injection, 24 relapsed almost immediately after cessation of treatment, and only six remained negative for seven months. Craig and Noguchi consider that the absence of clinical and serological findings, persisting for a period of over one year after treatment with salvarsan is stopped, indicates a cure of the disease. We examined a series of treated cases including those after salvarsan or salvarsan and mercury, where the amount of treatment was not considered other than its continuance until the Wassermann reaction. The reaction was clearly negative to very closely titrated Wassermann and Noguchi techniques. Of 19 of these cases, which for three months were negative to the Wassermann or the Noguchi reaction,

making the titration as close as possible, fourteen gave positive luetin tests. Of 17 cases, which under the same condition were negative for six months, 11 were still positive with luetin, while of 22, negative for one year, four were still positive to the luetin. It seems, therefore, that those not reacting to luetin might be considered cures.

A comparison of the different methods of treatment by careful titration of serum at different periods after treatment shows a reduction in antibody titration under all kinds of treatment. Salvarsan and mercury combined gives the most decisive reduction in strength of reaction, then salvarsan or neosalvarsan alone, and lastly mercury alone.

SUMMARY.

Demonstration of the spirochætæ and animal inoculation are decisive evidence of syphilis, but applicable only to primary and secondary states. The increased resistance to hemolysis and Lange's colloidal gold test add little if anything to the knowledge obtained by the Wassermann. The increased resistance of the red cells in treated cases lasts longer than the Wassermann reaction, but is very inconstant in nervous cases. The Wassermann reaction is a test with a high degree of accuracy, the majority of errors being on the negative side; but valuable as it is, it has definite limitations, and serious mistakes may occur in its practical application. Those of technique will disappear with experience and as standards of technique and reagents are developed. But aside from error in technique, and those incident to the factors of the complex reaction itself, are those due to individual variations.

Undoubtedly negative Wassermann reactions occur in active syphilis and often in latent syphilis. The reaction is not a true immune reaction, but is a symptom of syphilis and should be considered as such. It is a symptom that is more constant and more persistent than any other, but still a symptom that may be absent; it is amenable to treatment and more quickly influenced in one individual than in another. A negative reaction therefore by itself means little, while a positive result, excluding the known exceptions, means syphilis, but does not mean that any one symptom is necessarily syphilitic, only that the serum comes from a person infected with syphilis. The test is a laboratory method of exceptional accuracy, but should be regarded as only one fact in relation to others. It must be checked by clinical findings.

For this reason, for diagnosis, the original Wassermann technique (but always using a titrated complement) is to be preferred to the more close one-unit technique. With this latter method more weak reactions undoubtedly will be reported, but the possibility of non-specific reactions cannot be entirely excluded, unless in every case a separate titration of each serum is made. In my own laboratory the one-unit and the original Wassermann technique are always used, but any serum which gives a doubtful or weak positive result with a careful technique should be repeated or the burden of the responsibility placed in the hands of the clinician, who has all the factors of the case at his disposal. This criticism of the reaction in no way reflects on the real value of the test, if it has been carried out carefully, with due emphasis on the controls and interpreted with appreciation of its limitations. All laboratory results are but one link in the complete chain, often, as in these cases, a very important link, but should never be separated from the clinical findings.

The luetin test is probably the most sensitive test in treated cases of syphilis and is apparently specific. Its absence therefore seems the best criterion of cure in our hands to-day.

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DISINFECTION—WHAT DISINFECTANT IS THE MOST GENERALLY APPLICABLE FOR CLINICAL, SURGICAL, AND SANITARY PURPOSES?

BY HERBERT C. HAMILTON, DETROIT, MICH.

Phenol, discovered in 1834, was at first thought to be identical with wood creosote, which at that time was regarded very highly as a disinfectant. This was proved, however, to be incorrect, and while there were points of resemblance there were also several properties not common to both. Beechwood creosote is less poisonous and more germicidal than phenol proper, but it is only very slightly soluble, coagulates albumens more completely, and for various other reasons is almost discredited except for a few special purposes.

The discovery by Lister (1871) that suppuration of wounds could in almost every case be prevented by use of carbolic acid gave a great impetus to its use as a germicide and antiseptic. This work was the basis of the whole modern theory and practice relating to microörganisms, not only as they apply to Lister's special field of surgery but to that of sanitation as well.

Probably no discovery in biology has been more revolutionary and far reaching than his, since he shares with Pasteur the honor of demonstrating the connection between microörganisms and processes of infection. Lister found carbolic acid to be exceedingly efficient, and recommended it highly because of its ready adaptability to the processes of aseptic surgery. While it is fatal in 3- to 5-per-cent solution to the vegetative forms of microbial life, it is not always effective against spores in any dilution or even in pure form except at high temperatures. However, because of retaining its effectiveness in the presence of salts, acids, alkalies, and even protein, it ranks above mercuric chloride for some purposes, although under ideal conditions the latter is many times as efficient.

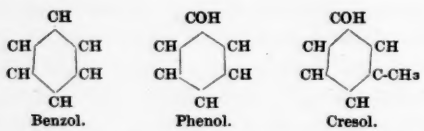
That portion of coal-tar oil which remains after phenol is removed was first recognized as having antiseptic value when it was used for pickling timber, a process patented in 1836 in England. It is still an open question what constituent of the heavy coal-tar oils is most valuable as a preservative, but its use for this purpose served to direct attention to the strongly germicidal character of certain of its constituents. A part of the oil, later known as creosote oil because of its similarity to wood creosote, was prepared as a disinfectant as early as 1874. The first preparation of importance was that known as creolin, prepared in 1887. It was analyzed, and its composition made known to the scientific world in 1889. Since that time the number of such preparations has increased enormously, and at the present time there are hundreds of the coal-tar disinfectants composed of creosote oil and soap and containing various proportions of phenols. The germicidal values of these range from that with a coefficient of 1, or about equal to pure phenol, to those of exceptional value with coefficients of 10 or more, depending on the amount and character of the phenols present.

The phenol coefficient is a term used to designate the value of a germicide. Since carbolic acid or phenol is well known as an efficient disinfectant, its value is taken as unity, and the value of any other substance similarly used can be expressed by a number called its coefficient, which indicates how many times more, or in some cases less, the disinfectant can be diluted than phenol and retain an equal germicidal value. Because of the infinite variety of combinations in coal tar, a chemical assay will not give a very accurate indication of the efficiency of an oil. Its real value can be ascertained only by actual comparison with phenol, using *B. typhosus* as the test organism, and finding the dilutions of the sample which are as efficient as certain dilutions of phenol.

These phenols are so called from their resemblance to carbolic acid or phenol proper, and are more or less closely allied to it both in composition and in properties. They differ, however, in several important

characteristics. With few exceptions they are liquid and will not crystallize as carbolic acid does; they are very slightly soluble in water, and require a solvent of some character to bring them into a condition in which their activity can be measured and applied; they are much less poisonous and corrosive than phenol, and are more strongly germicidal. Chemically the phenols of ordinary coal tar differ from carbolic acid in having one or more organic radicals attached to the benzol ring. The graphic formula for benzol is theoretically considered to be a hexagon, familiarly known as the benzol ring. Each angle of the hexagon is occupied by a CH group, and on this simple form thousands of organic compounds are built up by additions or substitution.

Phenol and cresol or cresylic acid are shown below in their generally accepted formulæ:



It is possible by synthesis to prepare derivatives still more strongly germicidal than those occurring naturally in the coal tar.

The insoluble character of the phenols and of the creosote oil containing them requires the use of an agent to be incorporated with these oils which will allow the formation of a homogeneous solution or emulsion when the product is mixed with water.

Because of the different kinds of oils used and the necessarily different treatments to prepare a substitute miscible with or soluble in water, the coal-tar disinfectants differ among themselves. These differences are unimportant except from the view-point of efficiency, and on this basis the disinfectants may be classified into three groups:

Group 1, those with a phenol coefficient of about 2 which are soluble in soft water, to make a clear solution. Compound Solution of Cresols U. S. P. is an example of this group.

Group 2, the ordinary type of coal-tar disinfectants with coefficients of 2 to 6 which emulsify when mixed with warm, soft water.

Group 3, the high coefficient disinfectants which also emulsify when mixed with water, but which are efficient when much more highly diluted.

There are certain advantages in using these coar-tar derivatives which make them far superior to most other disinfectants. These may be summarized as follows:

Convenience.—Compared with dissolving carbolic acid crystals to make a 3- to 5-per-cent solution it is much easier to dissolve any member of these groups. Some can be dissolved in water in any proportion; any one, if properly made, can be dissolved readily to make a stronger solution than is possible to obtain with carbolic acid crystals.

Efficiency.—The members of Group 1 will dissolve readily to make a solution of any desired strength, from that of pure carbolic acid down to one that is merely antiseptic.

The members of Group 2 are more efficient—a one- or two-per-cent solution usually far exceeding the efficiency of the strongest solution of phenol.

The members of Group 3 are still more efficient, as their phenol coefficients indicate.

Safety.—The coal-tar disinfectants are practically neither toxic nor corrosive when diluted for use on the basis of their efficiencies.

Character of Solution.—The formula for almost all the coal-tar disinfectants is such that the solution is alkaline and soapy, which aids its penetration. There is very little if any coagulation of protein to hinder penetration and lower the efficiency.

It is evident from the above comparisons that the proper use of the coal-tar disinfectants represents a distinct advance over that of carbolic acid. Even the one factor of safety alone is sufficient reason to exclude the latter from general use.

Comparing the coal-tar disinfectants

with those of the metallic salts and gaseous disinfectants the most important point to be considered is:

Adaptability.—Sulphites and sulphurous acid and ferrous salts are strictly limited in their usefulness to such conditions where the abstraction of oxygen or water is detrimental or destructive to the life and development of bacteria, etc. Calcium hypochlorite and potassium permanganate are valuable where bacterial life is endangered by the action of oxygen, these substances being oxidizing agents either directly or indirectly. It is evident, therefore, that such substances are not generally applicable as disinfectants. For purifying water or sewage where oxidation of organic matter is as important as germicidal action the oxidizing agents are especially adapted.

Mercuric chloride, while being highly efficient under exceptional conditions, is so readily destroyed or so lowered in efficiency under ordinary conditions that it is not a dependable disinfectant. It is precipitated by protein, soap and sulphur compounds; it is limited in its penetrating properties because of the coagulating action on albumen; it inhibits the growth and does not kill organisms after short exposures; it is exceedingly poisonous and irritating.

Formaldehyde is limited in its usefulness to its application as a gaseous disinfectant. In this field no preparation can replace it; but a solution of the gas in water applied as a liquid disinfectant is far inferior to phenol.

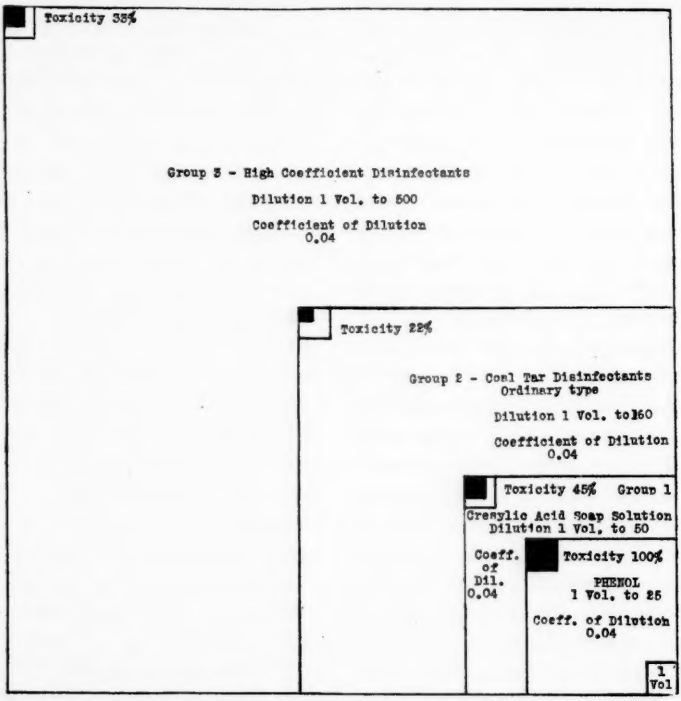
The comparisons made above indicate that even the ordinary coal-tar disinfectants when properly prepared are superior to phenol under all conditions, and surpass all other disinfectants aside from the purposes for which the latter are peculiarly adapted.

Recently coal-tar disinfectants of much higher efficiency have been prepared. The coefficients of some of these in fact are so high that the correctness of such statements is seriously questioned. The origin and chemical character of the oils from which these are prepared are more or less indefinite. Whether the character of the coal or the method of distillation by which the oils are produced is responsible for the high germicidal value is not generally known. That it is not produced in America might indicate that the character of the coal is at least partly responsible for the difference. The methods used in producing gases from coal for use in the steel and iron industries differ in England from those followed in America. It is a well-known fact that the temperature maintained and the presence or absence of air, during the destructive distillation, very markedly influence the character of the resulting products. In one case the benzols appear to oxidize to phenols, in another they appear to polymerize to naphthaline, anthracene, etc. This being true, it may be that still another series of compounds results from a slight difference in the conditions obtaining during this destructive process. The chemical composition has been claimed by Worrall (Rideal's Disinfection and Disinfectants) to be such as to place them among the organic compounds that are entirely different from the phenols of coal tar. Another writer attempts to throw a veil of mystery over them by assigning them to the class of diphenyls.

For the purpose of this article the composition and structure of those high coefficient oils are unimportant. The sanitarian is more concerned with the efficiency of the disinfectant prepared from them. Is there real value in it in proportion to the claimed efficiency? Can confidence be placed in the statement of its value when this so far exceeds that of phenol and similar disinfectants? The question may also suggest itself, How is it possible that a product less toxic and less corrosive than carbolic acid, practically harmless when diluted as it can and should be before using, is so exceptionally active that bacteria are killed in dilutions 15 to 20 times as great as can be safely recommended?

The average user of a disinfectant rarely knows from results whether it is efficient or not, because he has neither the facilities nor the skill to test it, and because incomplete disinfection or entire absence of it may not be followed by any infection directly traceable to such a failure. Even

the chemist, however familiar he may be with disinfectant oils, cannot determine with certainty the efficiency of any product entirely by its chemical properties. Bacteriological rather than chemical control is, therefore, a very essential requirement for disinfectants. Hygienic measures are too vitally important to be open to suspicion regarding the substances used. The methods



of applying them are so often open to question that the substances must be in the highest degree efficient.

The ideal disinfectant has been described in great detail by different authors. But the ideal disinfectant for every kind of disinfection is probably unattainable and its desirability questionable.

Formaldehyde, mercuric chloride, silver nitrate, phenol, and the coal-tar derivatives each has its sphere of usefulness, and each is more or less ideal in that sphere. Where a coal-tar derivative is applicable, however, there are certain properties possessed by this class of high coefficient disinfectants which very closely approach the ideal as a general disinfectant.

The average coal-tar disinfectant of Group 2 is used in a solution of one per cent, in which dilution it is about as efficient as a 3- to 5-per-cent solution of phenol. One of the disinfectants of Group 3, with a phenol coefficient of 20 when diluted to a 1-per-cent solution, is four times as efficient as a 5-per-cent solution of carbolic acid crystals. The accompanying chart is a graphic representation of the comparative efficiencies and toxicities of representatives of the three groups. The "1 Vol." square is shown in the lower right-hand corner, while the four larger squares show the volumes to which this one volume of phenol and of each of the three groups can be diluted, all of the dilutions having the same germicidal efficiency—a phenol coefficient of 0.04.

The toxicities are shown graphically by the squares in the upper left-hand corners of the four squares representing the dilutions. Phenol, being used as the standard, is entirely black, while the others are blackened in proportion to their toxicities, expressed in per cent of that of phenol. The ratio of the black "toxicity" square is a graphic representation of the non-toxic

character of these dilutions compared to that of phenol. For example, Group 3 with a toxicity of 33 per cent has a black square one-third as large as that for phenol; a comparison of the two toxicities with their corresponding dilutions shows that a solution of phenol is 60 times as toxic as a member of Group 3 diluted to an equal efficiency.

The coagulative action and the caustic and corrosive properties of the three groups can be only roughly measured; these seem, however, to be very closely associated with toxicity. So the practically harmless nature of Groups 2 and 3—particularly the latter—is evident from the chart.

Instruments are not corroded, nor is there any irritation to the healthy skin, when immersed in such a solution. The mucous membrane, however, being more sensitive will tingle and smart from application of this solution because of its alkaline and penetrating character.

Coal-tar disinfectants in general are, like phenol, unaffected by alkalies. While their values are diminished by organic matter more than is phenol, this is apparently a slower action rather than actual lowered efficiency, since there is almost no coagulation of the organic matter. In this case the fact that the disinfectant is in emulsified form explains its slow action, because necessarily the minute globules of oil composing the emulsion require a more prolonged period to penetrate moist organic matter, which tends to retard penetration.

Acids do not destroy but do materially impair the value of emulsified disinfectants in which the vehicle is soap. The same is true of hard or salty water. It is easier, however, to correct these waters or replace them with soft water with which to dilute a disinfectant than to replace soap by any other emulsifier of equal efficiency. Soap has several valuable properties in addition to that of being an efficient emulsifier of coal-tar oils. It is cleansing and tends to dissolve the natural, protective, greasy coating on the skin and other surfaces. It is not devoid of germicidal action in itself.

As a deodorant a coal-tar disinfectant has an action tending to absorb, remove, and replace bad odors. Its real value, however, is to destroy the putrefactive bacteria producing the odors—the only property which makes a deodorant of real value.

An emulsified disinfectant has been proved to exceed a soluble disinfectant even if the same constituents and the same proportion were present in each. This is shown to be due to a concentration of the minute globules of oily emulsion around the bacteria, the results being equivalent to those from a considerably stronger solution in which no minute globules of oil are present, but all is in uniform solution.

To summarize, a high coefficient disinfectant of the third group is less likely to be destroyed or inhibited in its action and is more generally applicable than the gaseous disinfectants, the oxidizing and reducing agents, or the toxic and protein-coagulating agents.

When diluted to make a solution equivalent to a 3- or 5-per-cent solution of phenol, it is

Non-toxic,
Non-corrosive to metals,
Non-coagulative to tissues,
Not caustic to the skin,
Not affected by alkalies,
Not destroyed by acids,
Not oxidized nor reduced by organic matter,
An efficient germicide,
At minimum cost per unit of efficiency.

It is not merely a substitute for carbolic acid; it is a new material possessing not only all the advantages of this valuable substance, but many others in addition. Why should the physician or the surgeon continue to use carbolic acid?

VALUE OF SCARLET RED OINTMENT IN GRANULATING WOUNDS.

Writing in the *Atlanta Journal-Record of Medicine* for December, 1913, DAVISON says that scarlet red medicinal is used in making scarlet red ointment. It is used in the form of an ointment of various strengths from 4 per cent to 10 per cent, as the powder itself is more or less irritating. Davison's experience has been that

the stronger preparations are irritating to the skin surrounding the wound. He therefore uses 4 per cent or 8 per cent, which, when applied to granulating wounds, stimulates the formation of epithelium, thereby proving very valuable in the treatment of indolent ulcers.

It closes breaks in the continuity of the skin, not by hastening the formation of scar tissue, but by actual cell proliferation from the epithelial edges of the wound, which thus results in the development of normal skin.

This ointment has been found useful in treating ulcers following burns, varicose ulcers, syphilitic ulcers, bed-sores, tubercular ulcers, *x*-ray burns, and ulcers resulting from infection and trauma. Davison has also used it beneficially in cases of skin grafts forty-eight hours old.

The most successful method of application he finds is first to cleanse the wound thoroughly with a solution of boric acid or other mild antiseptic. It is not best to use irritating applications unless specially indicated. One may, however, apply hydrogen peroxide if pus is present, or silver nitrate to control exuberant granulations. Tincture of iodine, 5 to 10 per cent in alcohol, and also turpentine are excellent applications to infected wounds to kill the infection. After the foregoing preparation, a thin layer of ointment is spread on gauze large enough to cover the wound. It is best to avoid the surrounding skin owing to possible irritation, especially when using the 8- to 10-per-cent ointment, or if the application is left on for several days. After applying the ointment cover with sterile gauze and bandage according to indications.

This preparation, as previously mentioned, is marketed in various strengths, some physicians recommending the use of an 8- or 10-per-cent ointment, alternating daily with some bland application, as boric acid ointment, to prevent undue irritation, and the breaking down of granulations already formed. Davison has found it better, however, to use the weaker 4- or 5-per-cent ointment, as one does not have to be so careful about alternating with other applications. The ulcer should be dressed every forty-eight hours, or oftener if especially indicated. It is not advisable to put on the ointment too thick, as it is then more likely to irritate.

Scarlet red salve is not antiseptic, therefore must not be depended on to kill out the infection. Davison first tries to get rid of the specific microörganisms; then employs the scarlet salve to hasten granulations. Or it may be combined with antiseptics such as boric acid, iodoform, balsam of Peru, blue ointment, etc. The scarlet red ointment has a drying effect and may produce a scaly condition of the skin after healing, but this is easily overcome by oily applications.

Davison has had excellent opportunity to experiment clinically with this remedy in all kinds of ulcers in the outdoor service at the Atlanta College of Physicians and Surgeons, where he has been using it for the past two years. This class of patients, as a rule, is very unsatisfactory, as they have to work, and cannot give the parts the rest they should. Neither can they be seen regularly, usually twice a week, often but once a week, and at times less often; but even under these great disadvantages Davison asserts he can report wonderful success in many cases, having relieved varicose ulcers of several years' standing in a few weeks or a few months. They have since been operated upon, which means a permanent cure for them.

Syphilitic ulcers heal much more promptly under scarlet red treatment. Davison usually alternates with the blue ointment in these cases. Venereal and incised buboes heal promptly after applying the proper antiseptic for the specific infection and then the scarlet salve. Ulcers whose surface is covered with necrotic tissue or abundant purulent secretion are unfavorable for the ointment, and in these cases it is necessary first to get the ulcer clean if possible, and then to apply the salve to stimulate the rapid formation of epithelium. He does not claim that it is a "cure-all," but does say that healing is essentially hastened, and that many indolent ulcers that have been haunting the office will be healed up in a surprisingly short time.

EDITORIAL.

LUES: THE INCORRIGIBLE.

One of the fairest and most straightforward presentations of our present knowledge concerning syphilis and its treatment is presented by Cunningham in the *Medical Record* of March 21, 1914. He begins his article with this striking sentence: "We have shot our last bolt, made our last bombastic boast, exploited to the limit the patented panacea of the new Apostle Paul, and we are still confronted with the unpalatable truth that in lues our medication offers no assurance of success. After a faithful adherence to the prescribed treatment, the luckless luetic who is entering on the long martyrdom of locomotor ataxia might well exclaim in the manner of the Bard of Avon, 'A pox on both your houses! salvarsan and mercury.'"

It having been demonstrated long since that mercurial treatment does not by any means prevent late syphilitic manifestations, which are apparently due to the hiding of the specific parasite in portions of the body where it was not hitherto known to exist, it is also becoming more and more evident that treatment by salvarsan, however efficacious it may be in destroying the spirochætæ in secondary lesions, is as ineffective as mercury in preventing locomotor ataxia and paresis; or, in other words, it is essential not only to use salvarsan in the early and late stages of syphilis, but to accompany or follow it by the administration of mercury as vigorously and for as long a time as we have been accustomed to do heretofore. Cunningham goes so far as to assert that nothing more is to be expected from salvarsan than from mercury, and that neither of these drugs is a preventive of the deplorable consequences of syphilitic infection; or, as he well puts it, "the outer works may be swept clear of the enemy, but the citadel is still in its hands." In other words, it is beginning to look as if a patient suffering from this disease has been only partly rid of the danger of late nervous manifestations, and partly rid of the danger of transmitting the disease to his offspring. It is a noteworthy fact, too, that in many instances those patients who lead the most correct and abstemious lives, after infection, and who are encouraged by their good health to believe that they are well, nevertheless ultimately are stricken with cerebral or spinal maladies and reach a miserable end by their development. Possibly the very fact that many syphilitics escape nervous manifestations for such long periods after infection serves to deprive the disease of the degree of horror which would be attached to it if the sequence of events followed one another more closely.

As an illustration of the fact that we still have much to learn concerning this malady and its treatment the extraordinary immunity possessed by women to nervous syphilis stands out prominently. Sexual excesses and alcoholism, which are supposed to add to the chances of a man developing paresis or ataxia, are equally active factors in many women who are syphilitic, yet they escape nervous symptoms. Why the spirochætæ should attack the cerebrospinal system of a man and fail to attack this system in a woman is one of the puzzles not as yet solved. This puzzle is the more difficult of solution because the disease produces just as active changes in the cutaneous, mucous, and other tissues of the body in women as in males. Another puzzle exists in the fact that certain men who are actively treated develop nervous lesions, and others who are notoriously careless as to treatment frequently escape. So far the important lesson is that not only are repeated doses of salvarsan essential, but that active treatment by mercury is just as necessary as if salvarsan was not used.

All these facts lead Cunningham to make a vigorous denunciation of the means by which syphilis is usually acquired, and he vigorously attacks the commonly held view

that self-restraint is unwise or impossible. He urges that the ghastly ultimate results be constantly brought before the minds of men whose moral tone cannot be sufficiently increased to make them restrain themselves because of it. As he well says, "Displays of temper are avoided in many instances because the individual knows that he will be punished for such a display. In one case the punishment comes at once; in another, perhaps twenty years later."

Cunningham does not attempt in his article to deal with the moral aspect of this question, but takes it up solely from the standpoint of hygiene and common sense, and ends up with these vigorous words: "If men will dance to the moans of outraged virtue they will pay in the coin of idiocy, ataxia, and premature death." Almost every medical man of experience knows that this is true. The chief difficulty is that the medical man is consulted after the fire has burned its way into the tissues and not before exposure has taken place. It would be wise if those who are interested at the present time in the campaign against the social evil would obtain permission to reprint this article and distribute it widely where it will do most good.

ANESTHESIA ONCE MORE.

If there has been any theme more constantly discussed in medical journals during the last half-century than the subject of surgical anesthesia, we do not know what it is. The reason for its constant discussion lies, not only in the necessity for the induction of anesthesia in a large number of patients, but also because our knowledge of anesthetic drugs is constantly widening. One of the most interesting features connected with surgical anesthesia has been the growing acceptance of ether as the general anesthetic of choice even in those countries in which until ten years ago chloroform was commonly employed, as in England and on the Continent. It is to the credit of American medicine that north of Mason and Dixon's Line ether may be said to have been always the anesthetic of choice, and the recognition of the fact that it should be administered like chloroform by the drop method, thereby avoiding many unpleasant symptoms as sequelæ, has increased its popularity. These words are of course not intended to reflect upon those who prefer chloroform in certain classes of cases or who use it by preference in warm climates where the conditions are unfavorable to the use of ether.

We have read with interest, in this connection, the communication made to the *St. Paul Medical Journal* for February, 1914, by Florence Henderson, a nurse who gives anesthetics in the Mayo Clinic. She tells us that ether has been used almost exclusively in this clinic for many years; that while formerly it was thought necessary to employ chloroform in certain cases, these indications for its use have seemed to disappear so that for the last five years it has not been employed. Such an announcement, coming from so rich a service, is of great interest and importance. She well points out that ether gives trouble chiefly when it is abused, and that it is so safe and easy to administer that it is often placed in the hands of a tyro, whereas nitrous oxide, which is equally safe but less easy to administer, is usually placed in the hands of the trained anesthetist. Undoubtedly she is correct in thinking that these facts have added greatly to the reputation of nitrous oxide and have acted unjustly to the reputation of ether. She even goes so far as to make the following statement: "If nitrous oxide were given as carelessly as ether very often is, there would be so many fatalities that its use would be prohibited."

While we think that this statement is excessive in the way in which it is put, particularly in view of the vast statistics which have been collected as to the relative safety of ether and nitrous oxide, and in view of the fact that nitrous oxide is largely used by dentists who possess little medical skill, it is nevertheless a vivid way of expressing a half-truth. So, too, we

think that her statement that statistics show that ether anesthesia is superior to all others in its range of application, and that if given properly very few patients find it disagreeable, is also unduly dogmatic, but she well adds that if in very serious cases the surgeon would exercise the same care in manipulation that is observed when nitrous oxide is used, and be content with as light an anesthesia, he would probably find that his patients would recover as rapidly and without the shock and unpleasant after-effects which are quoted in opposition to the use of ether.

Again, the wise statement is made that many of the difficulties encountered with ether are caused by giving too much rather than too little, and we are much pleased with the statement, which we have repeatedly tried in practice, that if the patient can be interested in something foreign to the work in hand, he will usually go under the anesthetic more rapidly and, it may be added, will act more satisfactorily, than if the mental condition is perturbed by forcing the ether or by allowing the mind, as unconsciousness is developing, to be harassed by a great dread. She recommends that a modified Esmarch inhaler, which is covered with two layers of stockinet, be used with the drop method, and that the inhaler at first be held an inch from the face as the ether is slowly dropped on it, the mask being gradually lowered, thereby avoiding any sense of suffocation. By this means the stage of excitement is very materially set aside or avoided.

The assurance that the operation positively will not start until the anesthesia is complete and the induction of mental comfort by encouraging words is an important factor too often ignored. Even in those cases in which local anesthesia is a dominant factor in preventing pain it has been found in her experience that a few whiffs of ether is advantageous in allaying nervousness, particularly if ½ grain of scopolamine and 1/6 grain of morphine is given one or two hours before operation. Our experience has been that morphine in certain individuals who have idiosyncrasies to it, and they are by no means few, increases the tendency to postoperative vomiting.

Miss Henderson makes the rather surprising statement that postoperative vomiting after ether is seldom persistent like that following chloroform. The general experience of the profession has been that the reverse is true, but possibly the explanation lies in her statement that postoperative ether vomiting is due to the drug being given in toxic doses, so that the blood becomes saturated with it and the stomach is called upon to aid in elimination. Her opinion is that the safety of ether has been its own undoing, and unlike many other persons of experience, nitrous oxide gas is considered by her as at best an inefficient surgical anesthetic; local anesthesia, in her opinion, standing next to ether in its wide sphere of usefulness. She even asserts that to-day we are going through a curious phase in the use of anesthetics, namely, "a return to narcotics, inefficient nitrous oxide and local anesthesia, a combination which has the bad qualities of all three," whereas ether given by the drop method, by a skilled anesthetist, and local anesthesia certainly fulfil the requirements more satisfactorily than any other anesthetic or combination of anesthetics used at the present time. These views seem to be so in accord with the practice of Philadelphia surgeons, who have been rather conservative in their use of newer methods, on the principle "Hold fast to that which is good," that we have read them with interest.

In this connection, too, it is interesting to find that Dr. Balfour, of the same clinic, contributes to this issue of the *St. Paul Medical Journal* an article upon novocaine as a local anesthetic. He commends it because of its ready solubility, the fact that the solution can be boiled without destroying its effectiveness, and because its safe maximum dose has been stated to be 7 grains. Its anesthetic effect persists for fifteen minutes, but its action is more prolonged when adrenalin is used with it. He furthermore points out that a one-half- to

one-per-cent solution can be used in almost unlimited quantities without ill effects, thereby promoting a wide infiltration of the operative field. It also possesses the distinct advantage over the hydrochloride of quinine and urea that there is no danger of sloughing. He has found that it can be used successfully in such grave operations as appendectomy, gastrojejunostomy, gastrotomy, cholecystectomy, and the removal of ovarian tumors. If adhesions are present, however, this method is not feasible. There is no doubt that operating under local anesthesia may have distinct disadvantages for the operator, as dissection in distinction from incision is practically impossible.

The method which Balfour employs is to prepare a one-half- to one-per-cent solution by dissolving novocaine in sterile water, boiling it for two or three minutes and adding enough adrenalin to make the solution 1:1000. A fresh mixture should be used for each operation. Five or ten minutes should be allowed for the induction of anesthesia after an injection.

The one great disadvantage of local anesthesia is that it does not relieve the mental shock which, in certain nervous patients, is inseparably connected with the dread of operative interference.

CAMPHOR AS AN EMERGENCY REMEDY.

More than twenty years ago, in a leading article in the THERAPEUTIC GAZETTE, we called the attention of the profession to the fact that so great a clinician as Graves, of Dublin, had strongly recommended the employment of camphor as a remedy to combat profound weakness or collapse. At that time this recommendation of Graves had been practically forgotten, and camphor was rarely employed for the purpose just named. With each succeeding year this use of a somewhat old-fashioned remedy has increased, and both surgeons and physicians are now in the habit of resorting to it with the view that it is a rapidly-acting, diffusible stimulant which can be used to pull a patient through a tight place. Some years ago, during the epidemic of cholera in Hamburg, Germany, it was found to be very efficient in combating the collapse of this profoundly exhausting disease. Within the last twelve months we have again called attention to its value. During these twelve months we have also called attention to a contribution made by Heard and Brooks, in which they claimed that even when camphor was given subcutaneously in as large doses as 50 grains it failed to produce any definite results, and concluded that it could not be used as a stimulant, nor did it act as a toxic agent. Our reply to this conclusion was that we had used it in one- and two-grain doses so frequently with good results that we could not believe that it was devoid of power, and while it might be true that ordinary instruments of precision failed to show any effect on the body it is entirely possible that by stimulating phagocytosis, or producing other changes in the organism, it may materially aid the patient in his struggle with the disease.

Attention is once more called to this matter by a useful paper contributed to the *New York State Journal of Medicine* for February, 1914, by Cruikshank. He quotes the well-known article of Seibert, who, following the lead of a number of German clinicians, recommended the use of camphor in pneumonia in much larger doses than had been hitherto employed, Seibert giving as much as 12 Cc. of a 20-per-cent camphorated oil every twelve hours to adults suffering from pneumonia, and 6 Cc. to children suffering from this disease who were four years old or more. Out of 36 patients so treated all recovered except one, a man of sixty-eight, who weighed 200 pounds, and had a fatty heart and double pneumonia. Seibert seems to prove that the good results obtained were largely dependent upon the fact that the camphor aided in the destruction of the pneumococci in the blood-stream, it being also found by Hensel that when very minute amounts of camphor were added to culture

media pneumococci were unable to grow thereon, although in control experiments a perfect growth was maintained. Other experimental work carried out by Welsh has seemed to indicate that camphor protects animals which are inoculated with the pneumococci.

Seibert's conclusions are that if a human being receives 36 grains of camphor hypodermically to 100 pounds of body weight every eight to twelve hours no symptoms of poisoning result, and that a very manifest addition to the patient's power to combat the disease is obtained. So, too, Fowler is on record concerning postoperative pneumonia to the effect that massive doses of camphor are efficient.

Cruikshank directs that a 30-per-cent solution of camphor in oil of sesame be employed, and that as soon as possible after the initial chill 10 Cc. of this solution, equal to about 36 grains of pure camphor, be injected to each 100 pounds of body weight, the dose being repeated every twelve hours except in cases of bilateral pneumonia and severe toxemia, when it should be given every six to eight hours. The site selected for the injection should be the outer side of the thigh or the abdominal wall, the skin being sterilized with tincture of iodine and the injection made deeply enough to get below the subcutaneous fat, whereby all danger of abscess is avoided. These heroic doses, which if taken by the mouth would heretofore have been considered as poisonous, seem to have been proved practically harmless.

It is interesting to note that in the discussion of Cruikshank's paper Seibert strenuously opposed the view that camphor is a toxic agent and claimed that he had given as much as 45 grains of camphor at a single dose hypodermically without any evil influence. He also pointed out that the doses heretofore employed were used as heart stimulants and were not adequate to aid the body in combating infection, which is the true purpose of its use. He quotes from a large amount of literature in support of his contention, holding that the earlier the injections are made the better are the results, as would naturally be expected. His view is that while camphor is not a direct germicide, it nevertheless renders the blood unsuitable for the multiplication of the pneumococcus, and he strongly advises that in cases of pneumococcic infection which invade the meninges, endocardium, or the pleura that 3 per cent of pure salicylic acid shall be added to the camphorated oil.

These reports point to a comparatively new method which deserves investigation. An enormous number of cases must be collected before statistics are of any value in determining a therapeutic result. The number of cases so far recorded is only indicative and not in the nature of proof, but if the results obtained in the hands of other physicians are anything like as encouraging as those which we have quoted a distinct gain in the treatment of a very fatal malady has been made.

THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE JOINTS.

There are few subjects about which some medical men have more confused ideas than diseases or deformities of the joints. This is not surprising in view of the fact that the joints suffer from a very large number of widely different lesions, and that one lesion frequently develops as a sequel to another. The term "rheumatism" has proved a most unfortunate one in that it is applied to a very large number of forms of arthritis or synovitis or inflammation of muscle sheaths of widely different origin. In much the same way as a diagnosis of malaria was often made before the parasite of malaria had been discovered by the miscroscope, so at the present time a patient is often told that he has rheumatism because the physician cannot find any term which describes the state of the joint or near-by tissues more accurately. It is becoming more and more apparent that the word "rheumatism" should be limited to acute articular rheumatism, which is a definite specific disease, and that more accurate terms should

be applied to other conditions which result in immobility or pain.

A very interesting contribution to this subject possessing much practical value is made by Luff to the *Lancet* of February 14, 1914. He recognizes that it is not an easy matter to differentiate diseases of the joints, and that the difficulty surrounding the diagnosis in consequence often leads to futile treatment, both medically and surgically. As a medical man he does not attempt to deal with acute synovitis, acute suppurative arthritis, tuberculous disease of the joints, or syphilitic disease of these parts, but deals solely with those conditions which are not treated by surgical measures. He well points out that it is of vital importance that an accurate, differential diagnosis as to rheumatoid arthritis and gout should be made. These are the most common forms of joint troubles, and the future of the patient depends largely upon the diagnosis, because the diagnosis in turn directs the treatment, which is widely different in the two conditions.

Rheumatoid arthritis occurs most commonly in females, and gout most commonly in males. The first is met with amongst the poor and ill-nourished; the latter most often amongst the well-to-do and well-nourished. Rheumatoid arthritis patients are to be well fed and often improve under good feeding; whereas most gouty persons do best upon a spare diet. In rheumatoid arthritis the onset is insidious; whereas the onset of gout is usually sudden. The first nearly always selects a joint of the thumb and rapidly spreads to other joints; whereas gout commonly develops in the feet and affects the great toe. In acute gout there is often redness and swelling. In rheumatoid arthritis redness and swelling, in the early stages at least, are rare. So, too, in gout pain is a marked symptom; whereas in rheumatoid arthritis it is seldom if ever severe. Rheumatoid arthritis sometimes affects the temporomaxillary articulation. Gout practically never affects that joint. So, too, in rheumatoid arthritis the cervical vertebræ often suffer from pain and stiffness—a condition almost never seen in gout; and, last of all, chalky deposits are found in gout but not in rheumatoid arthritis.

Luff believes that many cases which are considered as chronic rheumatism of the joints are in reality rheumatoid arthritis, and sometimes gout. Chronic rheumatism never produces the marked deformity of the other two affections. It is true there may be fibrous nodules and general fibrous thickenings, but the presence of subcutaneous fibroid nodules, while they occur in chronic rheumatism, are also not infrequently met with in rheumatoid arthritis, gout, and syphilis. In rheumatoid arthritis, as in gout, the cartilaginous portions of the joint are involved; whereas in ordinary rheumatism of the fibrous tissues the articulating surfaces are not affected. There are also no exostoses nor actual bony grating in rheumatism of the fibrous tissue, although in some cases a creaking of the fibrous tissue may give rise to the idea that grating of the articulating surface is present. Neither gout nor rheumatoid arthritis yields to full doses of the salicylates, but chronic rheumatism usually yields to some extent.

It must not be forgotten that acute rheumatoid arthritis may occasionally resemble acute rheumatism, probably because in each instance there is an infectious arthritis. But in rheumatoid arthritis of this type the disease does not pass from joint to joint, but remains permanent in the first joint, although other joints may be involved later on. Luff points out that a chronic villous synovitis of the knees is commonly mistaken for arthritis when in reality it is a purely local condition. There is often pain and tenderness, and creaking on movement, which the patient may notice as well as the physician. The capsule and ligaments of the joint are more or less relaxed, and there is a passive congestion of the synovial membrane. The creaking or crepitation is due to the folds of this congested membrane rubbing together. It is not a true bony grating. The resemblance of some of these cases to rheumatoid

arthritis is increased by the fact that when the synovial membrane is very relaxed, projections of the synovial fringe may cause a catching or locking of the joint when it is moved. In these cases, however, there are no pathological changes of the cartilages, or in the end of the bones, as in rheumatoid arthritis. Luff believes that careful auscultation of such joints, when they are flexed and extended, will reveal crepitus in distinction from the grating sound of abraded cartilages. Many cases of so-called displaced cartilage of the knee-joint are due to nipping of hypertrophied fringes.

An important differential diagnosis is that between sciatica and lumbago, on the one hand, and arthritis of the hip-joint on the other. In all of these conditions the pain is felt from the hip to the knee; but in arthritis of the hip-joint, rotating the thigh outward and abducting the thigh with the patient in the dorsal position cause severe joint pains. So, too, firm pressure at a point midway between the anterior superior spine of the ilium and the upper border of the great trochanter causes severe pain in hip-joint trouble; whereas in sciatica such pain is not induced. In the latter disease flexion of the thigh when the leg is extended causes great pain.

Care must be taken to separate lumbago from sacroiliac strain. The fact that acute articular rheumatism often closely resembles gonorrheal rheumatism is so well known as to scarcely require attention. In many instances chronic gonorrheal rheumatism results in permanent joint changes. The history of the patient will do much, if it is accurate, in making the differential diagnosis. Gonorrheal rheumatism is nearly always polyarticular, and affects the larger joints simultaneously or in succession, the knees being especially prone to the malady. In the early stages much can be done by subduing the urethral infection, by the use of autogeneous vaccine or serum, and resort to rest and counter-irritation. Finally, it must not be forgotten that occassionally septic arthritis leads to a diagnosis of gout, rheumatism, or rheumatoid arthritis. Under these circumstances, if the infection has been present a long time a differential prognosis by inspection and palpation may be impossible, but the use of the *x*-rays will reveal a rheumatoid arthritis and the characteristic rarefaction of the ends of the bones; whereas in infective arthritis the rarefaction, if present, is usually very diffuse, and not infrequently involves the shaft of the bone as well.

SARCOMA OF THE TESTICLE.

Bland Sutton, in his admirable pathological presentation of "Tumors Innocent and Malignant," notes that the terminology of tumors of the testes is very confusing, and accepts Curling's phrase, *i.e.*, cystic disease of the testicle, as a designation for a group of cases which clinically may be either benign or malignant. He reports the case of a man thirty-one years old on whom he performed the operation of radical orchidectomy, at the same time removing an enlarged lymph node lying on the inferior vena cava. This latter on microscopic examination contained a collection of small cystic spaces lined with epithelium identical with that in the testis. Six months later this patient exhibited a cystic tumor on the left side of the neck near the sternal end of the clavicle, which was removed and showed smaller cysts with a similar lining. Sutton believes the infection traveled up the thoracic duct. A year later the patient was in good health.

The dermoid tumor Sutton regards as extremely rare, and Verneuil's monograph, published in 1855, is still regarded by him as embodying all that is known of this subject even at the present day. As for sarcomas, these he regards as exceedingly malignant and as characterized by rapidity of growth and promptness of metastasis.

Most, as the result of study, shows that the lymphatic nodes first involved are those anterior to the aorta and vena cava lying at about the level of the kidney.

In regard to the special susceptibility of retained testicles to malignant disease Howard reports that of 57 consecutive cases of

cancer of the testes treated in the London Hospital and substantiated by microscopic examination, nine were instances of undescended testes, giving a proportion of 16 per cent.

As to the prognosis Sutton states that recurrence in the wound or stump is an unusual event; that dissemination due to infection of the lumbar lymph glands destroyed more than half the patients within a year and a half of the operation. With the hope of improving the results Sutton introduced his method of radical orchidectomy, by which the spermatic cord and its veins are completely removed. The free incision required by this operation enables the surgeon to extirpate the lymph nodes in the abdomen and around the vena cava.

Illuminating this interesting subject Codman and Sheldon (*Boston Medical and Surgical Journal,* Feb. 19, 1914) contribute a characteristically scholarly study. They abstract Ewing's pathological study as follows: "This paper shows us that all these testicular tumors, sarcomas, adenosarcomas, teratomas, and all the wordy changes which have been rung on similar terms, amount to this: that one and all are derived from the spermatic cells and, like the cells themselves, have all possibilities of development short of a complete fetus.

"Almost every tissue known in the body has been found in a testicular tumor—even a nearly perfect uterus. Thyroid glands, perfect teeth, bone, cartilage, etc., have been demonstrated; often several tissues in the same case. Usually, however, the epithelioid elements outgrow all the others, and we have a simple large round-celled tumor, which one pathologist classes as sarcoma because it arises from a mesoblastic organ, and another calls alveolar carcinoma because of its cellular arrangement and appearances. Practically all testicular tumors contain some of this tissue, though sometimes it is outgrown by the teratomatous elements. When pure it is the common tumor which we call sarcoma or carcinoma and Chevassu calls seminoma."

Codman and Sheldon have made a study of the cases operated on at the Massachusetts General Hospital in the last forty years and have been able to follow 64 cases. Of these 13 are living and well, all having been operated upon. Twelve are dead from other causes, 10 having been operated upon; and 39 died from the disease, 33 having been operated upon, which gives a mortality for the disease of 61.9 per cent. A careful and perfectly just study of the figures shows that something over 41 per cent of those operated upon survived the disease, and if 12 cases operated on when metastasis was evident are excluded, it was noted that over 52 per cent were cured. From which they conclude that while the prognosis of sarcoma of the testicle when operated upon is bad, it is not so universally bad as text-books would lead us to infer.

In 64 cases Codman notes that one began in the epididymis, but among the 16, the results of which were not traced, there are two of this nature. Moreover he finds that in four of the 64 known cases the testicle had not descended at birth; furthermore, that nearly every case gave a history of trauma, although he is not inclined to regard this as important in the etiology.

As to the location of the metastasis in the large majority of cases it was postperitoneal, and probably might have been helped by removal of the retroperitoneal glands.

In corroboration of Codman's findings are those of Chevassu, who out of 100 cases records 19 as living four years after castration.

THE PRIMARY CAUSE OF RHEUMATOID ARTHRITIS.

That rheumatoid arthritis is often cured by finding and ablating a focus of infection is recognized by both the surgeon and the physician—indeed, the prognosis of this malady is in the main dependent upon the finding of such a focus.

Crowe (*Proceedings of the Royal Society of Medicine,* Vol. VII, No. 2) has contributed a somewhat elaborate biological study of a microörganism which is a common

inhabitant of the skin, and for which he accepts Welch's name Micrococcus epidermidis, appending to this, as describing the variety, deformans, or more shortly using the term micrococcus deformans. He believes this germ produces the disorder mainly by its action on some portion of the nervous system, and that it is associated with other pathogenic germs which are actively engaged in secondary or mixed infection. Although supported by no animal experimentation he adduces a multitude of arguments to support his claim. Thus he notes that some three years ago, from the blood of a phthisical patient, who suddenly developed acute arthritis of the left knee-joint associated with brachial neuritis, be isolated a diplococcus, which he has since learned to recognize as the organism here described—the micrococcus deformans. The case was an unusual one, for though by no means ill the patient (a young woman, aged thirty-four) had had for certainly three years previously a raised temperature, which on the rarest occasions dropped below 100° F. night or morning, and usually remained about 101° F. Never had it been found to be normal, though two daily observations had been made during the whole of the period. A vaccine prepared from this organism produced remarkable results, in that after a very few doses the knee-joint became well and again serviceable, the neuritis disappeared, and the temperature dropped to normal. It was impossible to avoid the conclusion that this diplococcus was causative of the arthritis, the neuritis, and the fever.

A year later, within a week of each other, the author had catheterized urine sent to him of two women, both suffering from acute rheumatoid arthritis, coming on shortly after parturition. The micrococcus deformans was found in pure culture and in large numbers in both cases, and in both vaccines from the organism produced that characteristic result which one always associates with the injection of a vaccine prepared from the pathogenic organism in any given case. About the same time a male rheumatoid patient consulted Crowe. He had a chronic nasal discharge, in which the micrococcus deformans was found. Still more important, it was present in pure cultures in the urine. Here also the effect of a vaccine was obvious. It was obviously impossible to dissociate rheumatoid arthritis from the micrococcus deformans.

These four cases provided Crowe with the necessary starting-point for systematic investigation. When he was able to show a germ incidence of over ninety-three per cent in all cases of rheumatoid arthritis, obvious or suspected, and to demonstrate the clinical response to vaccines, it seemed manifest that the micrococcus deformans is the actual primary cause of the disease.

Crowe states that he chose the urine as his materies morbi, because his conception of rheumatism proper, which is by no means to be confused with rheumatoid arthritis, was based on the fact that the causal streptococci are almost invariably to be found in the urine, without any manifest morbid process in the kidneys, or even urinary symptoms. Presumably rheumatic streptococci are circulating in the blood and excreted by the kidneys. These organisms, too, have been shown to be common inhabitants of the human digestive tract. Obviously they are not particularly virulent, for the bacteriuria is not associated with any illness beyond chronic rheumatism. They would, however, possess potential virulence, for from acute rheumatic cases the same organisms have frequently been isolated from the blood, and rheumatic streptococci, whether isolated from the urine of chronic rheumatism or from the blood of acute rheumatic disease, produce the same condition of arthritis in rabbits. If rheumatism, then, is caused by organisms which originated as saprophytes from the bowel, it would seem that such a similar disease as rheumatoid arthritis might also be caused by some common saprophytic and avirulent organism. In both cases the germ would owe its continued existence to the fact of its avirulence; its very innocence would be its protection, and the immunity mechanism, unstimulated by such comparatively harmless microbes, would fail to

produce sufficient antibodies, or to wage effective war on the insidious invader. And so the germ would multiply and flourish exceedingly, but without much harm to its host, except when its numbers became excessive.

Rheumatism and rheumatoid arthritis present parallel pathology, in that the former is caused by a common saprophyte of the bowel, the latter by a common saprophyte of the skin, which gains access to the blood, whence it is excreted or passively filtered through the kidneys, and thus comes to be discharged in the urine.

This contribution may be regarded as suggestive rather than as convincing. None the less it is offered in such perfect sincerity and so well accords in general with the growing belief on the part of the profession that it is worthy of careful thought.

REPORTS ON THERAPEUTIC PROGRESS.

TREATMENT OF LOOSE TEETH DUE TO INFLAMMATORY DEGENERATION OF THE GUMS AND ALVEOLAR PROCESS.

The *Journal of the American Medical Association* of December 20, 1913, contains an article by HEAD in which he gives excellent advice. An efficient mouth-wash for use at home consists of a saturated aqueous solution of sodium silicofluoride which amounts to a 0.61-per-cent solution. This, when held for a minute in the mouth, morning and evening, and freely swashed for at least a minute through the teeth, is a great assistance in relieving inflammation of the gums. Like the bifluoride it seems to restrain the deposition of tartar on the teeth, except in about one per cent of cases, in which it seems to increase it slightly. But even in these cases the gums heal promptly and the superficial deposit is easily removed from the teeth with brush and pumice. The disagreeable flavor of the solution can be disguised by adding an equal amount of sodium chloride or a judicious quantity of aromatics.

A tooth-powder that will liberate enough free oxygen to make from 40 to 50 drops of a 3-per-cent peroxide solution for every 10 grains used on the brush in the mouth is as follows:

> Magnesium peroxide (200-mesh sieve), 60 parts;
> Sodium perborate, 30 parts;
> Castile soap and flavoring, 10 parts.

This can be used morning and evening for brushing the teeth and should be swashed around the interstices for a full minute before being ejected from the mouth. Without thorough cleansing and brushing of teeth morning and evening antiseptic washes will, however, be of no avail. Since the tooth-brush cannot cleanse between the teeth these surfaces should be swept free from bacterial deposits with floss-silk morning and evening, and the teeth and gums thoroughly brushed with strokes not less than an inch and a half long, and rotary wherever possible. The brush should be small, not over an inch and a half long, the bristles not over a quarter of an inch, and narrow, so that when the mouth is partly opened the brush can be placed between the ramus of the jaw and the third molars. Most brushing does not extend beyond the spring of the bristles, which instead of giving bristle friction merely pivots the bristles without cleansing. The upper and lower third molars more frequently decay and are subject to pyorrhea alveolaris simply because they are not cleansed. Structurally, they are not weaker than any other teeth. At each visit of a patient it is most essential that the necks of all the teeth be examined for bacterial plaques that may have been accumulating undisturbed since the last visit. The patient should be shown what movements of the brush are necessary for their removal, for a final test of a method of brushing the teeth and gums is, Does it clean away the bacterial plaques? Ninety-nine out of a

hundred cleanly people never brush the thick bacterial plaques from their third molars, nor, as a matter of fact, from half the other teeth, simply because they have never been taught how. Gums as well as teeth should be thoroughly brushed twice a day of all bacterial plaques. Observation of his patients, Head asserts, proves that healthy gums are no more injured by vigorous brushing than is the skin adjacent to the finger-nails. Inflamed soft gums will unquestionably be made sore for the first week or two, but persistence on the part of the patient and assistance on the part of the dentist in touching up the sore spots with silver nitrate will soon strengthen the gums to almost any friction the tooth-brush can give them.

The question of vigorous cleansing and massaging the gums with the brush is not only a question of removing external films of infection, but is also for the purpose of producing an autoinoculation that will create antibodies in the blood for the purpose of combating the disease, a vigorous massage of the parts causing a local hyperemia, which enables the antibodies in the blood to come into more intimate contact with the infecting bacteria. This is a most important phase in the cure of pyorrhea, and one that has not been sufficiently emphasized. The formation of antibodies for the cure of pyorrhea is a means of eradicating pyorrhea from the system. The autoinoculation caused by vigorous gum brushing combined with the judicious use of carefully prepared vaccines has given results in the way of a systemic improvement that are little less than marvelous.

PITUITRIN THERAPY.

In the *Albany Medical Annals* for December, 1913, ALBRECHT gives us these conclusions:

1. Pituitrin is a powerful stimulant to uterine contraction in labor, the latter nevertheless retaining its physiological character.

2. Its best action is in the second stage, when it is always harmless.

3. It is of value in the first stage with sufficient dilatation of cervix and no obstruction, provided it is given in small doses, otherwise tetanus uteri may occur.

4. Fetal heart-beats may become slowed, but unless labor is too prolonged they regain their normal character.

5. The average dose is one cubic centimeter and is usually sufficient.

6. Repetition of dose is always as effectual as the first administration.

7. Effect begins three to ten minutes after use and usually lasts an hour.

8. Postpartum conditions are normal.

9. As noted previously, the contraindications are but few.

10. It is of value as a cardiovascular stimulant.

11. It shows beneficial results in amenorrhea, menorrhagia, and allied conditions.

12. It will undoubtedly be found valuable in many other conditions, when the relations of the pituitary secretion to the rest of the system receive more study.

INTRASPINOUS MEDICATION IN PARESIS AND TABES.

LORENZ in the *Wisconsin Medical Journal* for November, 1913, says that the following conclusions seem warranted at this early date:

1. Intraspinous medication is a simple procedure.

2. The Swift-Ellis method of using blood serum has, in the hands of Lorenz, been very irritating and caused alarming symptoms.

3. The direct injection of a dilute solution of neosalvarsan in doses of 0.0006 gm. in the male and 0.0003 gm. in the female caused no untoward symptoms.

4. The direct use of neosalvarsan has apparently as much effect as the Swift-Ellis blood serum.

5. Intraspinous medication is a valuable adjunct in the treatment of early paresis.

6. The colloidal gold chloride test (Gold Sol) as used by Lange gave a characteristic reaction in every case of central nervous syphilis.

7. The antisyphilitic measures employed affected the "Gold Sol" test, making the same less positive and paralleling the reduction in lymphocytes and globulin.

8. A case of probable non-septic meningitis gave a reaction with the "Gold Sol" in the higher dilutions.

ACCIDENTS IN TRANSFUSION.

OTTENBERG and KALISKI, in the *Journal of the American Medical Association* of December 13, 1913, based on an experience of one hundred and twenty-eight infusions, state that accidents in transfusion due to the occurrence of hemolysis or agglutination of the donor's blood-cells by the patient's serum, or *vice versa,* can be absolutely excluded by careful preliminary blood-tests. They have been able to prevent accidents of this kind in 125 transfusions.

The relation between test-tube hemolysis and intravascular hemolysis is close, and it seems likely that in all cases in which there is test-tube hemolysis some intravascular hemolysis occurs. When this exceeds a certain limit hemoglobinuria results.

The occurrence of agglutination (between the blood of the donor and that of the patient) need not be regarded as an absolute contraindication to the transfusion, but non-agglutinative donors should be chosen whenever possible.

Phagocytosis of red blood-cells by leucocytes in the circulating blood of the patient transfused is undoubtedly connected with interagglutination of the two bloods; it occurred in the series of Ottenberg and Kaliski in two cases in which the serum of the patients was agglutinative toward the cells of the donors (in one of the cases the serum was almost hemolytic), and it did not occur in any of thirty-five non-agglutinative transfusions in which it was carefully looked for. These negative cases included two with extensive urticaria and one case with severe febrile reaction after transfusion. In the cases in which the serum of the donor was agglutinative toward the cells of the patient, no phagocytosis of red cells in the circulation was seen.

In selecting donors with regard to agglutination, the agglutination of the donor's cells by the patient's serum is more important to avoid than the reverse.

Febrile reactions or urticaria and other skin eruptions occur after about 10 per cent of transfusions, irrespective of hemolysis or agglutination, and are not due to fibrin ferment or to blood platelet destruction. These reactions, however, are never serious and the patients have done well in spite of them.

NOTE ON A SIMPLE METHOD FOR DIMINISHING CHLOROFORM AND ETHER SICKNESS.

The *British Medical Journal* of December 6, 1913, contains an article by RENTON on this topic. Having observed that cases of gastroenterostomy treated in the Fowler position had very little postanesthetic sickness, Renton has for the last six years raised the upper end of the patient's bed on blocks twelve inches high in all cases after chloroform or ether anesthesia. This he continues for twenty-four or thirty-six hours.

This plan has been followed by a great diminution in the amount of sickness. By the old method in which patients were kept lying in bed with the head very low, the amount of sickness was very great in many cases. The staff nurses at the Western Infirmary and nurses in private confirm the statement that the improvement since the upper ends of beds were systematically elevated has been very great, and in consequence the suffering to patients and the labor to nurses are very much less.

The reason that this method is satisfactory is purely mechanical, as it is more difficult to be sick in an elevated position than with the head low. Certain patients are, of course, very sensitive to the influence of chloroform and ether, but even when on previous occasions patients report that they suffered for days with sickness, when in the elevated position the sickness very soon passed off.

STUDIES OF URIC ACID OF BLOOD AND URINE, WITH SPECIAL REFERENCE TO THE INFLUENCE OF ATOPHAN.

McLESTER, in the *Archives of Internal Medicine* for December, 1913, reaches these conclusions:

1. The amount of endogenous uric acid in the blood of different individuals varies widely; yet, for a single individual, the figure is a constant one.

2. (*a*) Atophan increases general renal activity; in addition, it exerts a selective stimulating influence on uric acid excretion. (*b*) It simultaneously reduces the uric acid of the blood. (*c*) Its influence over uric acid metabolism would seem to be limited to its power of transferring, by means of the kidney, uric acid from the blood to the urine.

Since the above was submitted for publication, Folin and Lyman have detailed in the *Journal of Pharmacology and Therapeutics*, 1913, iv, No. 6, similar experiments. They reach like conclusions regarding atophan—*i.e.*: "The results obtained in this patient furnish a striking illustration of the fact that phenyl-quinolin carbonic acid acts on the kidneys (Weintraud) and does not mobilize (Brugsch) deposited urates."

A CLINICAL STUDY OF HYPERTENSIVE CARDIOVASCULAR DISEASE.

In the *Archives of Internal Medicine* of December 15, 1913, JANEWAY writes on this topic and arrives at the following conclusions:

1. The most prominent symptoms associated with high blood-pressure are circulatory rather than renal. The disease underlying high arterial pressure is predominantly a disease of the circulatory system, and is best designated hypertensive cardiovascular disease, either primary or secondary, when preceded by an inflammatory nephritis.

2. Death in this type of cardiovascular disease, among patients in private practice, occurs in the following ways, arranged in the order of their frequency: First, by gradual cardiac insufficiency; second, with uremic symptoms; third, by apoplexy; fourth, from some complicating acute infection; fifth, in an attack of angina pectoris; sixth, from purely accidental and unrelated causes; seventh, in a paroxysm of acute edema of the lungs; eighth, after the manner of cachexia.

3. The early symptoms associated with hypertensive cardiovascular disease have an important prognostic significance which can be utilized therapeutically, particularly for the institution of safeguarding treatment.

4. The early occurrence of symptoms of myocardial weakness, especially dyspnea, indicates a more than 50-per-cent probability of an eventual death by cardiac insufficiency. In these patients, to safeguard the heart is the main therapeutic indication.

5. The early occurrence of anginoid pain or exertion does not indicate a probability of death in an anginal paroxysm for more than one-third of the patients. It does indicate a probable cardiac death of some type. The therapeutic indications here are similar to the foregoing, except as modified by the existence of syphilitic aortitis. Anginal attacks as compared with other cardiac symptoms do not materially affect the expectancy of life.

6. Polyuria, particularly if nocturnal, indicates the probability of a uremic death for more than 50 per cent of the patients. It is not essential to safeguard the heart in these patients, unless associated cardiac symptoms exist.

7. Headache, especially that heretofore described as typical, indicates the probability of a uremic death for more than 50 per cent of the patients, and of death from apoplexy for a considerable number of the remainder. The therapeutic indications are similar to those of polyuria.

8. Loss of flesh, if marked and progressive, is a symptom of bad prognostic import.

9. The relation of the height of the blood-pressure to prognosis is doubtful. Systolic pressures persistently well above 200 mm. Hg. seem to indicate a greater probability of death by uremia or apoplexy.

The exact height of the blood-pressure does not seem to have much bearing on the expectancy of life.

10. The average duration of life in this group of patients, after the onset of symptoms associated with high blood-pressure, has been four years for the men and five for the women. One-half of the whole number of deceased died during the first five years. One-quarter of the number lived between five and ten years, and the remaining quarter over ten years from the appearance of the first symptoms. The existence of this considerable number of patients living for a long period of time suggests the need of great caution in making a prognosis as to expectancy of life.

TREATMENT OF SYDENHAM'S CHOREA.

In the *Lancet* of December 20, 1913, LANGMEAD, speaking of the medicinal treatment, does not recognize a specific remedy in chorea, and thinks it is agreed that we have all seen cases which appeared to react quickly to a particular drug, whilst other cases apparently analogous were uninfluenced by it. In some cases after a short rest in bed the symptoms rapidly and unexpectedly subside; in others, apparently similar, the chorea persists in spite of the use of several therapeutic agents. There is a logical basis for the administration of sodium salicylate or aspirin because of its effect upon rheumatism—and we most of us regard chorea as a rheumatic manifestation; but, again, it must be confessed that in following a long series of cases treated in this way it is difficult to be sure that these drugs are capable either of diminishing the severity of an attack or of shortening its duration. However, Langmead usually prescribes one of these drugs, for they are accredited with striking at the root of the disorder—namely, rheumatism—and by their administration one may hope to ward off further rheumatic manifestations. They are especially indicated if the temperature is raised, and should be pushed in sufficient doses to bring it down to normal. Dr. D. B. Lees advises that 400 to 500 grains of sodium salicylate should be given in twenty-four hours, and has himself given even more. Speaking with all due deference, Langmead states he cannot say that he has found that these large doses have a better effect than others of more moderate size. If salicylates are used, whether in large or small doses, certain precautions should be taken to avoid poisoning symptoms. Those which are most to be feared are due to acid intoxication, and resemble somewhat diabetic coma. The child becomes drowsy, her respirations deep and noisy (air hunger), vomiting occurs, the breath is sweet from the presence of acetone, and acetone and diacetic acid are found in the urine. If the salicylate is not discontinued the child may sink into coma and die, though this is a very rare occurrence.

These symptoms may be avoided if two precautions are exercised: first, the bowels should always be kept well open, and secondly, twice as much sodium bicarbonate should be given as sodium salicylate. Before beginning salicylate treatment it is well to administer a purgative, and the bowels should have been opened within the twelve hours preceding any increase in the dose. By attention to these details all anxiety concerning acid intoxication disappears.

Arsenic is perhaps the drug which is used next most frequently in the treatment of this condition, and some authorities state that it should be pressed until symptoms of arsenical poison supervene. There are two ways in which it is usually given—one in very large doses for a short time, until toxic symptoms arise, and the other in smaller doses for longer periods. Langmead states he cannot say he has been impressed by the value of the drug, whilst it has been his unfortunate experience to encounter more than one case in which arsenical neuritis was produced—a condition which takes far longer to get well than that for which the drug was given.

During the time that he was medical registrar at the Hospital for Sick Children, Great Ormond Street, he had the oppor-

tunity of watching the effect of treatment by drugs on chorea. In one ward very large doses of sodium salicylate were being given in every case. In another arsenic was extensively tried, whilst in a third no drug treatment was relied upon, and many of the patients received no so-called specific for the disease. Two years' observation of the cases in the different wards failed to convince Langmead that the patients improved more rapidly in one than in another, and, indeed, some of the most satisfactory cases were those in which no special drug took any part in the treatment. Chloral and bromides are particularly useful where there is loss of sleep, and have a very special indication in those patients who, with extremely active movements, begin to show signs of exhaustion. When used for these particular cases he believes that sedatives, of which these two are examples, are of great value. Another measure of great assistance in such cases is the hot pack.

Langmead has been able to watch the effects of treatment by chloretone, a drug which has been advocated strongly by Dr. Essex Wynter for this condition. Again, he must confess to a failure, he asserts, to recognize any great advantages accruing. If the drug is pushed the children become very drowsy, and no doubt movements are less as the result; but it is questionable whether the good effects warrant this procedure except in cases of great loss of sleep, such as those which react to other nerve sedatives and the hot pack. Ergot has been recommended by Dr. Eustace Smith. Langmead's experience of it is very limited, but as far as it goes it agrees with that of others who have written on the subject, and who have been unable to obtain his good results.

The after-treatment of chorea is almost as important as the treatment of the acute attack. There comes a time when the active stage is over, but the child lies in a listless state with general muscular feebleness and perhaps slight movements. Further rest in bed produces no improvement. At this stage it is advisable to encourage the child to perform voluntary movements and to reëducate its coördination. Massage and passive movements also play a useful part at this time. Many simple devices may be employed to reëstablish coördinate movements.

At the beginning of this form of treatment such simple exercises as apposing the corresponding fingers of the two hands or touching the nose with each finger in succession are useful. While the patient is still in bed the following exercise may be useful: heel to toe, heel to shin, heel to knee, first with one leg and then with the other. Afterwards somewhat more complicated movements may gradually be introduced, such as placing a cribbage-peg into every second, every third, or every fourth hole, games of draughts, halma, dominoes, and the like. When the patient is out of bed coördination of the legs may be reëducated by getting her to walk along a straight line, or chalk dots, or on certain parts of the pattern of the carpet. These are only a few examples of many exercises which may be devised with a little ingenuity. By such means the period of convalescence may be shortened materially, and the incidence of residual chorea and choreiform automatism considerably diminished.

THE SINGLE DOSE OF ANTITOXIN IN DIPHTHERIA.

The *Boston Medical and Surgical Journal* of December 11, 1913, reminds us that in the Wesley M. Carpenter Lecture of 1913, which was recently delivered by him, and the subject of which was "Antitoxin Dosage; Anaphylaxis; Immunization against Diphtheria," Dr. Park again advised the single dose of antitoxin, and adduced further arguments in favor of its adoption. Experimental evidence was submitted showing that in animals a single dose administered after infection would prove efficacious when the same and even larger quantities, in divided doses, failed to save life. In addition, he cited cases of diphtheria treated with one dose in which the antitoxin content of the blood was tested from hour to hour, evidencing a progressive increase for the

first three days. The apparent improvement following a second dose of antitoxin, he believes, is attributable partly to the continued absorption of the first injection and partly to the necessary time required for recovery in the local process. When the first dose is of adequate size, a second one produces no real additional effect. The strongest confirmation of Dr. Park's contention is afforded by the results observed at the Willard Parker Hospital, for he states that during the past year over 95 per cent of all cases of diphtheria treated there received but one injection of antitoxin, and the records show that the mortality from the disease has been the lowest in the history of the institution. The doses given were practically the same as those mentioned by Dr. Darlington for initial injections—5000 units in the milder cases, 10,000 or more in the moderate or rather severe ones, and 20,000 in the malignant ones. In the latter the antitoxin was administered intravenously wherever possible, and, in Dr. Park's opinion, a given number of units by this method has four times the effect that it has when injected subcutaneously.

A PLEA FOR THE STUDY OF BREAST-MILK PROBLEMS.

LOWENBURG in the *Journal of the American Medical Association* of December 13, 1913, makes the following statements:

1. Breast-feeding is the only sane and safe method of infant feeding.

2. The breast is too frequently sacrificed without cause.

3. Psychic influences are largely determinable so far as the mother is concerned.

4. Fear plays an important rôle in the etiology of artificial feeding.

5. The two most common examples of fear depend on the mother's belief in her inability to provide suitable nourishment and on the signs of early indigestion, which are erroneously regarded as a contraindication to the continuance of breast feeding.

6. The profession of the country has not been sufficiently educated in the methods of dealing with nutritional and digestive disturbances of the breast-fed.

7. Medical curricula are lacking in such instruction.

8. Too much time has been spent in studying the problems of artificial nourishment without very much progress or benefit.

9. Physicians resort too quickly to artificial feeding.

10. Economic and social reasons for discontinuing the breast are the most difficult to overcome and find their origin in the present social system.

11. Charity is but a makeshift to relieve the present state of error.

12. A mutation of economic and social conditions, while offering relief, is remote.

13. Nursing mothers should receive actual cash compensation from the state.

14. A campaign of education directed toward legislators, mothers, and physicians is urgently needed.

THE TREATMENT OF LEUKEMIA WITH BENZOL.

BARKER and GIBBES in the *Johns Hopkins Hospital Bulletin* for December, 1913, report on their experience with this method. The clinical notes on the patient's condition show him to have made a steady improvement from the beginning of his treatment to the time of his discharge. The most marked subjective feature throughout was his extreme psychoneurotic state, but this became progressively better with the lowering of his white blood count. At no time during the administration of benzol did he complain of vertigo or eructations, nor was he troubled with colds or bronchitis. He did have a slight sensation of burning along the esophagus at times, and the odor of benzol was perceptible in his breath.

Their case is in accord with previous reports, and so demands but little special comment. The course of benzol administration extended over approximately eleven weeks, during which period the total number of white blood cells returned to normal, the red blood cells increased from 3,600,000

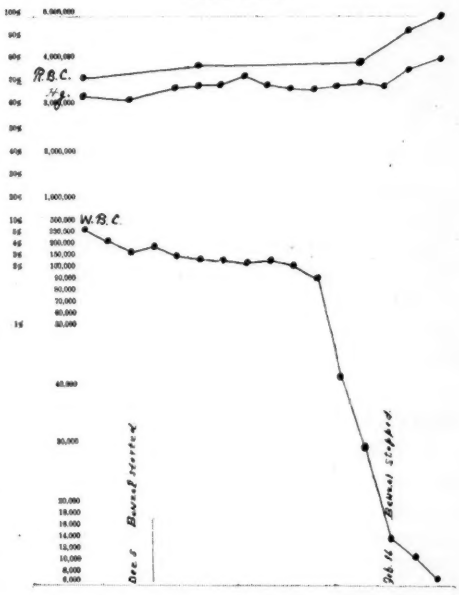
to 5,000,000, the hemoglobin changed from 65 per cent to 82 per cent, and the patient's general condition showed definite improvement. In so far as they can judge of this new line of therapy in leukemia from the observation of the patient reported, they share the belief of most authors as to its efficacy in reducing the white blood cells, and in leading to an associated subjective improvement of the patients. Their patient progressed in a satisfactory manner with the exhibition of benzol alone, but they feel that the possible value of other accessory measures, such as *x*-rays, arsenic, thorium X, and radium, in the therapy of leukemia should be kept in mind.

Pappenheim's recent criticism of the benzol treatment, based upon a theoretical consideration of Selling's work and an attempt to apply some experimental studies made by himself to clinical medicine, has been replied to by von Koranyi. The latter author holds that the production of definitely noxious manifestations in rabbits and anatomical lesions of the kidneys, liver, lungs, and spleen, by relatively immense doses of benzol, does not necessarily imply that similar effects follow upon the use of the drug as it is now therapeutically employed in leukemia. Von Koranyi incidentally mentions that one of his patients is, at the present time, apparently well, ten months after the discontinuation of treatment. Tedesko likewise replies to Pappenheim, stating that he has observed no bad results clinically, and warning against such criticisms as tending to prevent an adequate testing of the new drug. The ultimate place of benzol in the treatment of leukemia, polycythemia, and Hodgkin's disease can be determined only through further studies which include careful clinical observations.

Finally, they wish to emphasize the facts, first, that benzol does possess dangerous toxic properties; secondly, that its clinical effects are not yet clearly understood; and thirdly, that the greatest care should be exercised in its administration. A studious regard for the dosage as thus far determined, a watchfulness for the manifestations of poisoning that are well defined and easily detected, and a willingness to employ other measures in conjunction with this drug, are means that will serve to give the new treatment a fair trial and prevent its falling into an undeserved disrepute. Certainly no patient should be treated by benzol unless he can be kept under continuous close observation; for the present, therefore, it may be well to restrict its use to the treatment of patients in hospitals, rather than to run the risks attendant upon its extension to domiciliary practice.

The following chart shows the blood changes in their case in a graphic manner:

BLOOD CHART



Top line=red blood-cells; middle line=hemoglobin; bottom line=white blood-cells.

BLOOD TRANSFUSION AND REGENERATION IN PERNICIOUS ANEMIA.

VOGEL and MCCURDY, in the *Archives of Internal Medicine* of December 15, 1913, reach these conclusions:

1. The transfusion of physiologically unaltered blood is one of the most promising forms of palliative treatment available in pernicious anemia. The number of cases

on record in which a remission of notable degree and considerable duration has followed immediately on a transfusion is so great as to make it impossible to regard these results merely as coincidences. If proper precautions are taken to select a healthy donor and by the usual tests for isohemolysins and isoagglutinins the serum and corpuscles of donor and recipient are found mutually congenial, there is no danger, and the measure should be employed earlier in the disease instead of waiting until the patient is in a desperate condition.

2. There is evidence in favor of the view that greater judgment and accuracy are needed in determining the amount of blood to be transfused. It is quite possible that too large an amount of transferred blood may be injurious, and that more benefit is to be expected from small doses introduced at intervals to be determined by the progress of the patient.

3. The enumeration of the reticulated cells by means of the method of vital staining affords a useful means of gauging the hemopoietic activity of the bone-marrow, and by watching the patient's progress in this way the indications for and effects of various therapeutic measures can be well determined and supervised.

INCREASE IN TOXICATION OF ETHER BY NEW METHODS OF ADMINISTRATION.

The *Journal of the American Medical Association* of January 31, 1914, contains an article by COBURN on this topic.

The small amount of ether administration in the intravenous method, as compared to that used in the inhalation and insufflation methods, has led some to believe that this direct method of introduction lessens the amount of ether utilized by the patient in the maintenance of anesthesia, whereas the reverse is true. Anesthesia is maintained by keeping the ether and the blood at a certain ratio. When the blood remains constant in volume increase or decrease in the percentage of ether deepens or lightens the anesthesia accordingly, and conversely, the amount of ether within the system remaining constant, an increase in the volume of the circulating fluid decreases the depth of the anesthesia. To maintain surgical anesthesia in the intravenous method, then, the amount of ether required is increased in the proportion that the saline solution bears to the original, total volume of blood.

In the normal adult (150 pounds) the amount of blood varies from 4.58 to 4.65 liters, and from this can readily be calculated the extra burden of ether toxication thrust on the patient. In such a patient, using preliminary hypodermic medication, intravenous administration requires for induction about 8 ounces of saline solution; that is, at the end of induction there is being thrown into circulation about 5 per cent more ether than is required in other methods; at the end of an hour's surgical anesthesia the excess is 15 per cent, and at the end of a prolonged operation, in which it is reported that 4¼ pints of saline solution were administered, the excess was more than 40 per cent.

It is futile to hold that this pronounced excess of ether does not increase ether intoxication. While some of the saline solution transudes into body cavities and tissues, it carries ether with it, and this must subsequently be excreted. The comparative freedom from postnarcotic nausea and vomiting does not necessarily indicate lessened ether toxicity, for the methods of administering ether that avoid passing a strong vapor continually over the olfactory nerves are likewise followed by less nausea and vomiting. The odor of ether, *per se*, is nauseating and causes much of the vomiting in the cruder methods of administration.

In the oil-rectal method of administering ether the same ultimate result—increasing the amount of ether in circulation—seems to follow, although the modus operandi is entirely different. Here, in the adult, about 6 ounces of ether plus 2 ounces of olive-oil (both by volume) are introduced into the rectum. All of the ether thus introduced reaches the patient's circulation, except that which is subsequently withdrawn, as

there is no source of evaporation, such as occurs in other methods. It requires only 1½ ounces of ether in the patient's circulation without rebreathing to induce and maintain an hour's surgical anesthesia. The amount of ether withdrawn in the oil-rectal method shows that a much larger amount than this reaches the patient's circulation. The much larger amount of ether required in this method is probably due to the oil interfering with the anesthetic action of ether. Theoretically, of course, this is true, and it seems to be verified practically. Not only is there very much more than 1½ ounces difference in the original amount of ether introduced into the rectum and that withdrawn at the end of an hour of surgical anesthesia, but there is a decidedly greater tendency toward respiratory paralysis without the corresponding depth of anesthesia that occurs in other methods. This indicates that while the oil may lessen the anesthetic action of ether it does not correspondingly decrease its toxic action on the respiratory center. Certain it is that the margin of safety between surgical anesthesia and respiratory paralysis is considerably reduced in the oil-rectal method.

It is not contended that these methods are without value, for each possesses decided advantages; but the price that is exacted for these advantages should always be given proper consideration.

HYPERACIDITY OF THE STOMACH.

SCHMIDT, in the *Journal of the American Medical Association* of February 7, 1914, in discussing this subject, says that in treatment the principal point is not to restrict ourselves to the stomach alone, but at once to aim at calming and strengthening the nervous system, the state of which is of so great importance for the comfort of the patient. Some patients suffering with hyperacidity can get rid of their disease in no other way than by giving up their work for some time, leaving their families and undergoing a real confining treatment in a hospital or sanatorium. Schmidt demands this in every severe case, and believes that he owes many good results to this procedure.

Naturally we try first to reduce the increased secretion of the stomach by application of medicines. Atropine is known as a substance which diminishes the secretion of the gastric glands as well as those of the salivary and sweat glands. Therefore the extract of belladonna, which at once levels the tonus of the vagus and removes the accompanying spasm of the sphincters, is a popular part of many stomach powders. Von Tabora recommended regular injections of 0.5 to 1 mg. of atropine before meals, but it is surely not advisable to continue this for a long time, if there is a chance of removing the real cause of the illness in another way. The alkalies which have already been taken for a time by most patients not only neutralize the superfluous acid, but, according to Bickel, also stop their production to a certain degree. On the other hand, they irritate the stomach glands, particularly if carbonic acid is set free by their reaction with the stomach acid, for the carbonic acid is not indifferent to the mucous membrane. Therefore, it is preferable to give the magnesium oxide instead of sodium bicarbonate, and combine it with small quantities of belladonna and a purgative salt, such as sodium sulphate. With the latter Schmidt intends to produce a transudation of fluid into the intestine and so to diminish the secretion of the stomach glands. The effect of the Carlsbad water, which often proves beneficial, seems, indeed, to result from the favorable combination of alkaline and purgative salts, but it should always be given in small quantities. Some other acid-binding drugs, as powdered charcoal, kaolin, and aluminum silicate, act in another way, by mechanical absorption, each of them being worth trying occasionally. More heroic is the cure of Henriques and Hambart, who for a time withdraw all chlorides from the food. Winternitz and Petri of Halle followed a new principle by introducing magnesium peroxide into the

stomach. These authors observed that small quantities of hydrogen peroxide diminished even in a pronounced degree the acidity of the stomach contents, and that this fact is based on an irritation of the surface epithelium, the alkaline product of which neutralizes the present acid. Here we have to deal with the opposing effect of one irritation to another. Lastly, silver nitrate belongs to this group. Its excellent effect on hyperacidity is caused partly by its astringent qualities on the secretory cells, and partly by blunting the hyperirritability of the mucous membrane. For the latter purpose it is to be given as a medicine to be taken half an hour before meals; for the former it is used as a solution to rinse the empty stomach in the morning by means of the tube.

As regards the diet, which is perhaps even more important than the treatment by medicine, opinions differ, though some controversial points are already cleared by the results of experimental medicine. There is no doubt that all kinds of foods and drinks which belong to the class of secretory stimulants must be avoided, as, for example, too much salt, sparkling drinks, high-percentage alcoholics, coffee, meat-juices or extracts of beef, and spices. More difficult is the question of how to arrange the meals. We distinguish three groups of diet specialists corresponding to the single groups of food —those who prefer albuminates, those who prefer carbohydrates, and those who prefer fat. The advocates of the first emphasize the fact that only the albuminates can bind the hydrochloric acid, and therefore have the same effect as the alkalies. They sometimes go so far as to prescribe that when the pains appear the patients should take regularly some food prepared from meat, eggs, etc., lest the stomach should become empty.

Contrary to this, the advocates of the carbohydrate diet assert that they are more correct, since the ingestion of carbohydrates stimulates the production of gastric acid little or not at all, while albuminates first stimulate and then neutralize the acid. They declare their diet as a rational one, superior to the symptomatic albuminate diet. They not only avoid stimulating the production of the acid, but also try to produce a reflex of alkaline juice from the duodenum into the stomach, which is most easily done by taking one or two tablespoonfuls of pure olive oil before meals.

With regard to these three groups, it must be stated, from a practical point of view, that it is most difficult to give one special kind of food for any length of time. Moreover, it is really unnecessary because experience shows that some other dietary prescriptions are more important. Schmidt long ago returned to a mixed food and is quite satisfied with it, but strictly observes the following rules, which he believes to be decisive:

1. All food must be well cooked, and most carefully minced. This order is based on his own theory that the chief business of the stomach is to reduce the food into small pieces, not by its muscular force, but by chemical influences. These influences consist in the dissolution of the intermediate substances, the connective tissue of meat and fat, the gluten of the bread, and the so-called "middle lamina" of the vegetables. As to the connective tissue, Schmidt has shown that only the gastric juice is able to digest raw or insufficiently cooked connective tissue, and that during the digestion of meat in the stomach it is always connective tissue which is first dissolved, so that the muscular fibers are set free. This phenomenon is the base of the connective-tissue proof which is a part of his test diet.

As to the disintegration of bread in an efficacious gastric juice and its remaining compact in achylia or hyperacidity, it is sufficient to mention the phenomenon which is generally known as amylorrhexia. The middle lamina of the vegetables is not really dissolved by the stomach juice, but is only prepared by it for dissolution in the alkaline intestinal juice. In this way the chemical stomach work leads to the reduction of

all sorts of food into small pieces, and this is a much more significant act of the organ than solution of albuminous matter; it is more surely and more powerfully effected by the pancreatic juice. As the food pieces are broken up by the chemical influence of the gastric juice, they are pushed into the duodenum. Pieces not quite broken up remain for a long time in the stomach, while fluids are rapidly pushed forward. This process is also of importance for the evacuation of the stomach.

2. The stomach must come to rest at least once during the twenty-four hours. This can best be arranged by changing the usual time of meals. The patients should eat large quantities of food in the morning, but only a small quantity in the evening. This means that during the forenoon, when, according to Schmidt's experience, the patients suffer least from their pains, they should take two or three meals with intervals of two hours, so that there is little appetite left for lunch. After lunch they do not take anything until 7 P.M., when only porridge is given. They will now fast until the next morning, and this change also has the advantage that the production of gastric acid, which has been adapted before to lunch and dinner, is regulated in a new manner; the chief secretory reflexes, easily provoked during the former style of living, are now put out of circuit. Schmidt asserts with certainty that he has obtained very good results with this method.

3. Drinking should be generally diminished and restricted to those hours when the stomach is not filled with food. He therefore gives the meals rather dry, except the first breakfast and the evening soup, and lets the patients drink a short time before lunch or in the afternoon. This prevents loading the stomach, which measure is of special importance to patients suffering from atonic ptosis.

4. If the condition is a severer one or if it is combined with ptosis of the stomach, the patients have to stay in bed for two or three weeks. He thinks this advice most important. It results from the experience that many patients have their acid pains only when being about or walking, never when lying down. It is further based on the frequency of latent ulcers which lurk behind the symptoms of hyperacidity.

It may be remarked that Schmidt's dietetic treatment of hyperacidity comes into close touch with the old Leube cure in gastric ulcers. He confesses that there is only a certain difference of degree.

Schmidt sometimes also orders hot compresses in simple hyperacidity, if they give relief to the patient, but does not apply them continually as Leube does—only twice daily for two hours. For the night he substitutes cold hydropathic compresses for them.

Washing the stomach is indicated only if the hyperacidity rises on the basis of a catarrh. Then Schmidt rinses the empty stomach in the morning with 1:1000 solution of silver nitrate. Moving the bowels must be carefully regulated.

What is to be done if all these prescriptions do not lead to recovery? This question is equivalent to the other—"Under what circumstances are we allowed to operate on hyperacidity or hypersecretion?"—and cannot be answered generally. Indeed, the nature of the process alone—that is, its being a functional one—cannot always be decisive; it may sometimes be of less importance than the violence of the pains, or the general state of health, or the social position of the patient. There is a difference between an apparently neurasthenic patient whose condition remains unchanged after a well-performed gastroenterostomy which only reduced his stomach pains—for example, an old man who has given up business and can stand his pains if he takes care with his food—and a young man overwhelmed with his business who wishes at all costs to get rid of his sufferings. In the latter case Schmidt advises an operation. There is no doubt, in his opinion, that a case of hyperacidity or hypersecretion, even without complication, which cannot be re-

lieved by internal treatment in order to make the patient fit for work, gives an indication for operation.

CONTRIBUTION TO THE KNOWLEDGE OF THE THERAPEUTIC ACTION OF PHYLACOGENS IN INFECTIOUS DISEASES.

GUIDO GRECO of the Ospedale Maggiore di Milano, Medical Department, under the direction of Professor Bonardi, in the *Pensiero Medico,* No. 11, 1914, says that having had at their disposal some of Dr. Schafer's important bacterial derivatives at a time when the most varied forms of infectious rheumatism reigned in Milan, and seeing also the clinical importance of these varieties of affections in this region, he thought it advisable to initiate researches in the group of rheumatic infections.

Greco reports succinctly the clinical story of eight persons affected with acute and chronic polyarticular rheumatism, cured exclusively with phylacogen.

Case 1.—B. A., aged thirty-nine years. Since the age of thirteen he suffered five times from acute polyarticular rheumatism. Has now been ill four days with acute pains in spinal column (cervical section) and all the articulations of the inferior extremities, except the coxofemoral, and all those of the superior extremities. The temporomaxillary articulations are also affected, so that the patient cannot open his mouth. The articulations of the extremities are very red and swollen. High fever. The virulence of the process and the multiplicity of the localizations impede the slightest movement on the part of the patient.

Man of very robust constitution, muscles very developed, abundant adipose pannicle. Temperature 39.3°, pulse 90, respiration 28, arterial tension 175; subdelirium.

All the articulations above mentioned, including those of the fingers, were very painful, very red, and swollen.

Blood test: Both form and volume of elements normal. Hemoglobin 105 per cent by Sahli; red globules 5,021,000 per cmm.; white globules 7000 per cmm.

Leucocytic formula:

Neutrophylous polynucleates	79 per cent
Eosinophylous polynucleates	1 "
Basophylous polynucleates	—
Large lymphocytes	5 "
Small lymphocytes	7 "
Large mononucleates	4 "
Forms of passage	4 "

Blood cultures: In a first culture in peptonized broth of blood extracted from the vein, after twenty-four hours, a slight uniform turbidness of the cultural medium was observed, caused by a streptodiplococcus which resisted Gram's reaction and which formed in small, short chains. Planted in flat agar, gave small round colonies of a whitish color. Other cultures repeated after a few days remained sterile.

Diagnosis: Rheumatic infection of a septicemic character; very acute polyarticular rheumatism.

On October 28 the cure was initiated, using exclusively rheumatism phylacogen.

First day, Oct. 28, 2 Cc. injected subcutaneously. The temperature (which during the cure and in all the cases mentioned here was taken regularly every two hours) on this first day rose to a maximum of 39.1° C. four hours after the injection with an increase of six-tenths. Pulse 92; respiration 30; no rigor.

Second day, Oct. 29, 5 Cc. injected subcutaneously. The temperature, which at the moment of injection was 38.4°, after three hours rose to 39.6°, without rigor. Pulse 86; respiration 28.

The condition of the articulations remained unchanged. Slight internal pain at point of injection.

Third day, Oct. 30, 0.50 Cc. intravenously. After two hours temperature rose to 40.7°, with a rise of 1.7°, accompanied by very intense rigor lasting about one-half hour and followed by copious perspiration; temperature fell to the minimum of 37.6°. Pulse 94; respiration 30. The pains were considerably decreased.

Fourth day, Oct. 31, 1 Cc. intravenously.

Maximum temperature 40.5° two to three hours after the injection, accompanied by intense rigor as on preceding day. The improvement of the articulation symptoms continued; the patient could eat and move his mouth properly. No local reaction. Pulse 80; respiration 25. Profuse perspiration.

Fifth day, Nov. 1, 1½ Cc. intravenously. After two hours the usual rigor with temperature at 41°. The urine was limpid; all traces of albumin had disappeared.

Sixth day, Nov. 2, 2 Cc. intravenously. Temperature and rigor same as preceding day. Pains continued less acute; the patient could move his arms and began to move the hands and the fingers.

Seventh day, Nov. 3, 2½ Cc. intravenously. Usual rigor and temperature 40.8°. Marked improvement of pains and motility. It was noted, however, that for two days the temperature had never fallen below 38°.

Eighth day, Nov. 4, injection of 10 Cc. subcutaneously. The patient could not only move freely, but could also leave his bed and walk a few steps. Fever stationary. No rigor after injection.

Ninth day, Nov. 5, injection same as previous day; gave no remarkable general reaction. Produced obstruction and local pain. Temperature as above.

Tenth, eleventh, and twelfth days, cure suspended owing to the pulmonary symptoms, which on this last day had nearly disappeared. On the thirteenth, fourteenth and fifteenth days the highest subcutaneous dose (10 Cc.) was again injected, and as both the pains and the fever had disappeared the phylacogen treatment was completely suspended. Fearing a relapse the patient was kept in the hospital until December 8, on which day he left the hospital completely cured. An examination of the blood, made before the patient left, showed a slight decrease of hemoglobin and of the figured elements of the blood (hemoglobin, 85 per cent by Sahli; red globules, 4,600,000; white globules, 7000) without any morphological modifications.

Case 2.—B. L., aged 38. The only illness of any importance from which he had ever suffered was an acute polyarticular rheumatism which five years ago obliged him to stop in bed for fully two months. The actual illness dated back fifteen days, and was characterized by pains in all articulations of the superior extremities and some of the inferior extremities (right knee, feet), with tumefaction and fever. At home he had already tried aspirin medication without any result.

Man of robust constitution, skeleton normal, healthy muscular system. Temperature 38.5°, pulse 92, respiration 27, arterial tension 170.

The articulations of the superior extremities (shoulder, elbow, radiocarpal, phalangeal metacarpus) were painful, swollen, very red. The right knee and the articulations of the tibiotarsal were in a similar condition.

Blood cultures: Made twice, always with positive issue. The staphylococcus albus was obtained.

Blood test: Hemoglobin, 95 per cent by Sahli; red globules, 4,400,000; white globules, 6500.

Elements examined did not present any alterations.

Leucocytic formula:

Neutrophylous polynucleates	68 per cent
Eosinophylous polynucleates	—
Basophylous polynucleates	—
Large lymphocytes	8 "
Small lymphocytes	9 "
Large mononucleates	9 "
Forms of passage	6 "

Diagnosis: Polyarticular rheumatism (recurrent and acute).

As the patient was reluctant to take the phylacogen treatment, an energetic salicylic cure, aided by vapor baths, was initiated, but after three days it was noted that the condition of the patient had become notably worse; the temperature increased to 39.5° and never fell below 39°; the pains extended to the articulations of the fingers also, whilst those already existing became

much worse, so that the slightest movement made the patient scream.

The rheumatism phylacogen cure was then initiated at the request of the patient.

First day, Oct. 31, ½ Cc. intravenously. The temperature, which at the time of the injection was 39°, after an hour reached 40.4°, with intense rigor; when the rigor had ceased, profuse perspiration took place. The patient passed a calm night; the pains at the inferior extremities decreased to such an extent that a few slight movements were possible; superior extremities stationary. Pulse 104; respiration 30.

Second day. Owing to the intensity of the reactions the dose was not increased. As usual, after an hour, rigor; temperature 40.2°; perspiration. The pains continued decreasing, and on the following morning the patient could move both arms and legs; the tumefaction also very much decreased; the temperature fell gradually to the minimum of 37.2°. Pulse 96; respiration 30.

Third day, 0.75 Cc. in the vein of the arm. Reactions not quite so intense; maximum temperature 39.5°, but the patient felt very dejected. The pains had nearly all disappeared. Temperature, minimum 37°, pulse 90, respiration 26.

Fourth day, 1 Cc. intravenously. Rigor, maximum temperature 39.3°, which soon fell, to rise again to 37°. Articular tumefaction completely disappeared. Still a few slight pains in the hands and the feet. Pulse 84; respiration 23.

Fifth day, 1½ Cc. intravenously. Temperature during rigor 39.1°, then apyrexia; the pains had completely disappeared; the motility had again become normal. The patient only felt weak.

Sixth day, 2 Cc. intravenously. Condition the same as preceding day.

The patient declared himself to be completely cured and did not wish to continue the cure. Objectively was noted: Temperature normal; articulations no longer swollen and painful; motility complete. Conditions of heart unchanged. Both blood and urine examined; nothing remarkable observed.

Nov. 12, after having been bedridden for fifteen days, the patient left the hospital.

Case 3.—M. G., aged twenty. Ever since eight years of age he commenced suffering from articular rheumatism; from that age to now he had been ill with this complaint eight or ten times, and each time he was never completely cured, articular deformities always remaining; movements were limited, which troubles, with the renewal of the attacks, became every time more marked.

The last attack dated one and one-half months back, which was specially marked in the fingers and in the left tibiotarsal articulations.

Weak youth, pale, nutrition deficient; skeleton presented alterations due to the recurring attacks of rheumatism, namely, the cervical and the first dorsal vertebræ became enlarged and practically stiff, so that the lateral and bending movements were nearly abolished; the left radiocarpal articulation was deformed in such a way that the clear demarcation from the forearm to the hand was not visible, and the flexion movements of the fist were impossible. Nothing at the respiratory organs.

Blood test: Hemoglobin, 70 per cent by Sahli; red globules, 3,700,000; white globules, 7200; result of examination normal.

Leucocytic formula:

Neutrophylous polynucleates	60 per cent
Eosinophylous polynucleates	—
Basophylous polynucleates	—
Large lymphocytes	9 "
Small lymphocytes	25 "
Large mononucleates	4 "
Forms of passage	2 "

Blood culture: Negative.

Diagnosis: Recurring polyarticular rheumatism, with tendency to become chronic.

A salicylic cure was initiated alternately with vapor baths; cardiac tonics and reconstituents were also administered; this treatment was continued with brief periods of rest for fully forty days, but did not give rise to any improvement, so that it was thought advisable to start the rheumatism phylacogen cure.

Because of the chronic state of the process the administration was intravenous, but owing to the feeble constitution of the patient and to the condition of the heart the cure was begun with a dose of 0.25 Cc., and during all the treatment (10 injections) the dose of 3 Cc. was never exceeded.

The reaction was always very marked (intense rigor, increase of temperature from 37° to 39°, profuse perspiration), but the heart never showed disquieting symptoms.

After three days' treatment the patient showed signs of a marked improvement (in regard to the pains and the possibility of moving), limited to those articulations that had been affected by the last rheumatic attack, namely, the articulations of the fingers and the left tibiotarsal articulation. After the fifth injection the pains disappeared totally whilst movement was completely free; the symptoms of the left radiocarpal articulations seemed slightly attenuated, but this fact became more evident on the following day, so that a few limited flexion movements from the hand to the forearm were possible. More than this was never obtained on the following days; moreover, the symptoms of the spinal column were not modified in any way. After ten days' treatment, when it had been decided to administer a larger dose subcutaneously, the patient left the hospital.

Case 4.—V. G., aged forty-nine. Never had any illness except the usual infantile exanthemata. On December 26, he began to note a swelling of the hands with acute pains and difficulty of movement; on the following day the pains spread to the knees and feet, and at the same time an eruption of dark-red spots at the inferior extremities in the vicinity of the articulations was noticed.

Patient with deficient development, bad nutrition. Temperature 37.1°; pulse 77; respiration 20; arterial tension 160. Height, m. 1.45; weight, kg. 41. A very marked diffused redness of the pharynx was noted. Lungs sound; heart measurements normal. A diffused efflorescence of hemorrhagic, reddish spots, small at trunk and larger and darker at the inferior extremities, was also noted. Hands and left tibiotarsal articulation swollen and painful.

Blood test: The red blood-corpuscles were rather pale, without any morphological alterations.

Hemoglobin, 68 per cent by Sahli; red globules, 3,100,000; white globules, 6000.

Leucocytic formula:

Neutrophylous polynucleates	65 per cent
Eosinophylous polynucleates	4 "
Basophylous polynucleates	1 "
Lymphocytes	12 "
Large mononucleates	10 "
Forms of passage	8 "

Blood culture: Negative.

Diagnosis: Subacute polyarticular rheumatism; rheumatic peliosis.

First day of treatment: Rheumatism phylacogen 2 Cc., subcutaneously; medium fever elevation (37.6°), no rigor. Pulse 78; respiration 21.

Second day, 5 Cc. subcutaneously. Point of injection painful; articular pains attenuated; the skin spots turned pale.

Third day, 5 Cc. hypodermically. Marked general improvement; pains disappeared. The spots hardly visible. Marked local reaction. The cure was interrupted for a few days, as patient complained of pains at point of injection. In the meantime the spots had completely disappeared, and the patient, declaring himself cured, would not continue the treatment, but after about a week a new eruption was observed similar to the first, accompanied by short pains in the knees. The cure was resumed; injection on four consecutive days of 5 Cc. of phylacogen. Already after the second injection the symptoms had disappeared definitely.

The patient left the hospital completely cured.

Case 5.—D. A., signalman, aged twenty-five years. After suffering five days from a slight sore throat, be began to feel marked pains in the articulations, and high fever. Youth of rather delicate constitution. The articulations of the shoulders, of

the elbows, the radiocarpal articulations, and those of the knees and feet are very swollen and painful.

Blood test: Hemoglobin, 100 per cent by Sahli; red globules, 3,500,000; white globules, 7500.

Leucocytic formula:

Neutrophylous polynucleates	72 per cent
Eosinophylous polynucleates	2 "
Basophylous polynucleates	1 "
Large lymphocytes	5 "
Small lymphocytes	10 "
Large mononucleates	6 "
Forms of passage	4 "

Blood culture: Negative.

Diagnosis: Acute polyarticular rheumatism.

First day of treatment, 0.50 Cc. phylacogen intravenously. Rigor of moderate intensity. After 1½ hours the temperature rose to 39.6° (at the time of the injection 39°). Pulse 102, respiration 32. During the night the condition of the patient improved notably, both as regards pain and fever (38°).

Second day, 0.70 Cc. intravenously. Rigor more intense, with temperature 39.8°, followed by colliquative perspiration. At midnight the temperature fell to 36.8°; pains much diminished, movements fairly free. Pulse 90; respiration 22.

Third day, 0.60 Cc. intravenously. Moderate rigor (38.4°), after which the temperature remained at 37° to 37.4° for the following twenty-four hours. The improvement of the articular symptoms very accentuated, with the exception of the right radiocarpal articulation, which continued to be painful and swollen. On the twelve following days the cure was continued, gradually increasing the doses to 5 Cc., always administered intravenously; after five days' constant apyrexia (with the exception of the general reactions), all the articular troubles disappeared, with the exception of the right radiocarpal articulation, the improvement of which was very slow.

Not having any gonorrhea phylacogen at hand, an antispecific cure was begun with repeated injections of antigonococcus serum of the Milanese Institute, but without results. Every treatment was suspended. The improvement, although slow, continued. No pains or tumefaction were noted at the other articulations. After a month the patient left the hospital, with only a slight obstacle in the motility of the hand or the forearm.

Case 6.—F. A., aged thirty-five. The actual illness dates eight days, and began unexpectedly with fever, sore throat, pains and tumefactions at the articulations of the inferior extremities, and afterwards of the superior. During these last days a troublesome cough set in, with frothy and abundant expectoration. Robust person, with tendency to corpulence; skeleton normal, enforced decubitus, suffering aspect, dyspneic, slight cyanosis of the face. Pulse 115; respiration 40; temperature 39.6°; arterial tension 175. The radiocarpal articulations of the elbows, shoulders, the coxofemoral articulations and those of the knees were very painful and swollen.

Blood test: Blood examined was normal, both in color and form of figured elements.

Hemoglobin, 105 per cent by Sahli; red globules, 4,600,000; white globules, 8200.

Leucocytic formula:

Neutrophylous polynucleates	78 per cent
Eosinophylous polynucleates	—
Basophylous polynucleates	2 "
Large lymphocytes	4 "
Small lymphocytes	8 "
Large mononucleates	3 "
Forms of passage	5 "

Blood culture: Negative.

Diagnosis: Acute rheumatic infection; catarrhal angina; with disseminated areas of bilateral bronchopneumonia.

First day of treatment, 2 Cc. rheumatism phylacogen subcutaneously. The temperature remained constantly about 39°. No reaction. Pulse 103; respiration 42; perspiration.

Second day, 5 Cc. hypodermically. No variation in the febrile curves; no rigor; articular and pulmonary symptoms unchanged. Pulse 102; respiration 42; perspiration.

Third day, 8 Cc. hypodermically. At night the temperature decreased to 37° C., to rise again during the night to 38.4°. The pains were somewhat mitigated; general condition improved. Pulse 94; respiration 32.

Fourth day, 10 Cc. hypodermically. The articulations were still a little swollen, but the pains had almost completely disappeared. During the night the temperature fell to 36.8°. Motility moderate, so that the patient could sit up in bed without any help. Pulse 90; respiration 30.

Fifth day, 10 Cc. hypodermically. Temperature did not exceed 37.8° during the twenty-four hours. Pulse 85; respiration 28.

Sixth, seventh and eighth days. The subcutaneous injections were repeated at the same dose. The articulations had again become perfectly normal, and patient did not feel any more pains. Active and passive movements were free, fever disappeared; pulmonary symptoms reduced to simple catarrhal symptoms. This treatment was continued for three more days, to avoid any possible relapse. It was on this day that a great eruption of small pustules was noted on the head and neck, from the contents of which, planted in broth and in agar, cultures of common pyogenes were obtained (staphylococcus pyogenes, aureus, cereus). On the same day the patient could leave his bed for a few hours.

On the twenty-seventh day patient left the department completely cured.

Case 7.—R. C., aged sixty-two. Had been suffering from pains and tumefaction of the left tibiotarsal articulations for about eight months—troubles which persisted in spite of all the prolonged treatments received in various foreign hospitals. Person of more than usually robust constitution. Rather thin, of dark complexion. Temperature 36.6°; pulse 78; respiration 22; arterial tension 190. Examining the extremities, a slight tumefaction of the left radiocarpal articulation was noted; the tibiotarsal articulations presented a notable tumefaction, much more marked at the left, where even the slightest pressure was very painful; could not place left foot to the ground.

Blood test: Hemoglobin, 98 per cent by Sahli; red globules, 4,800,000; white globules, 8600.

Leucocytic formula:

Neutrophylous polynucleates	75 per cent
Basophylous polynucleates	2 "
Eosinophylous polynucleates	—
Large lymphocytes	6 "
Small lymphocytes	8 "
Large mononucleates	7 "
Forms of passage	7 "

Blood culture: Negative.

Diagnosis: Subacute, recurring articular rheumatism.

Feb. 2, treatment initiated, first dose 2 Cc., subcutaneously. Neither local nor general reaction. Following day dose of 4 Cc., giving moderate local reaction; after about four hours the temperature rose to 37.6°. Dose administered Feb. 4 was 5 Cc., and pains had considerably improved. On Feb. 5, dose 7 Cc., and in the afternoon a marked decrease in the volume of the articulations affected and of the pains was noted. The movements of the left foot, which was the most affected, were much more free. Continued increasing the dose by 1 Cc., daily, until the contents of one whole ampoule were exhausted.

Feb. 8. On this day (seventh day of treatment) the articular tumefaction of the forearm and of the right foot had completely disappeared; that of the left foot, although decreased, was still swollen at the malleolar regions. The pain was considerably reduced and localized at the inner malleolus. The 10-Cc. dose was continued for four days. The improvement was much slower than on the preceding days, but the patient could get up with only a slight pain at the inside ankle. No trouble at the other articulations. In order to act with more energy, it was thought advisable to inject the phylacogen intravenously at successive doses of 0.50, 1, 2, 3 and 4 Cc., after which the treatment was definitely suspended. The patient did not feel the slightest pain,

although the diameter of the right foot was a little larger than the corresponding left; ambulation was free. Left the hospital after a week in good condition.

Case 8.—C. A., aged twenty-five, three months ago suffered with polyarticular rheumatism, and entered this department. A few days ago the pains reappeared, accompanied by fever. Pale young man; bad nutrition. Temperature 38.2°; pulse 70; respiration 20. The articulations of the knee were fairly painful and swollen. Numerous purple spots on the legs of an intense dark-red color, smaller and paler at trunk.

Diagnosis: Recurring rheumatic polyarthritis; compound cardiopathy; mitral and aortic insufficiency; bronchoalveolytic subject with rheumatic peliosis.

In this case five hypodermic injections of rheumatism phylacogen were administered, in progressive doses of 2 to 7 Cc. Already from the second day the purple spots had become much paler, so that on the fourth day they had completely disappeared, as well as the articular symptoms of the knees. The temperature, however, did not show signs of decreasing, and remained always from 38° to 39°, although the patient did not feel unwell, so that it was impossible to keep him in bed. This fever was stated by the doctors in charge to be due to the pulmonary lesion, which seemed to be more active; anyway, after about a week, the thermic curve assumed the proportions proper to this illness, and the patient left the hospital without any rheumatic manifestation.

Considering that the medicaments commonly used to combat rheumatic infection are limited to the usual salicylic preparations, vapor baths, and toxic cures, it must be recognized that rheumatism phylacogen is an excellent preparation of indisputable efficiency, as well as rational, since it is indicated to directly conquer the cause of the disease.

In the cases studied by the author, with the exception of the local and general reactions (according to its intravenous or subcutaneous administration), the use of phylacogen has never caused any after-effects, either on the heart or on the kidneys, even when these organs were previously affected by the infectious process in its course, or by other former infections; he had never noted any endocardiac localization when the cure was initiated, which is a fact of great importance.

Often after the first injection, if administered intravenously, and after the third, if administered subcutaneously, the patient feels a great relief in regard to the articular pains, which disappear rapidly as the treatment proceeds. The fever is much more obstinate to conquer.

The skin affections of a hemorrhagic character disappear after two to four injections. In one case, the course of which was chronic, good results were obtained (it must be noted that in the previous attacks the patient had been obliged to stay in bed for two to five months); in another case the effect of the cure was rather uncertain, but it is necessary to remember that for reasons due entirely to the patient this cure was too brief, and the rheumatism, which had lasted about fifteen years, had caused irreparable damage.

ACTION OF THE NITRITES ON THE ISOLATED SURVIVING PULMONARY ARTERY.

MACHT, in the *Journal of the American Medical Association* of February 14, 1914, has this to say as to the action of the nitrites. The action of this group of drugs was found to be so remarkable and also of such practical interest that it was deemed worth while to describe it in this preliminary note.

Sodium nitrite, nitroglycerin, erythrol tetranitrate, and amyl nitrite were each and all found to produce a contraction or constriction of the pulmonary arterial strip. The remarkable action of the nitrites, which have always been known as typical vasodilators, though unexpected, probably holds good in the living body too, as corroborated

by some indirect evidence gathered by other observers. Bradford and Dean, observing simultaneously the blood-pressures in the carotid and pulmonary arteries of dogs, noted a rise of pulmonary pressure after administration of nitroglycerin and amyl nitrite, which they erroneously attributed to "an action on the heart in such a manner as to weaken the efficiency of the left side so as to lead to the accumulation of blood in the right side." H. C. Wood, Jr., also by the blood-pressure method, noted a rise of pulmonary pressure after amyl nitrite, which he strongly suspected as being probably due to a pulmonary vasoconstriction. To quote his words: "It would seem almost proven by exclusion that the cause of the rise of pressure in the lesser circulation can be due only to contraction of the pulmonary blood-vessels." Finally, a French observer, Petitjean, studying changes in pulmonary blood-pressure, and at the same time controlling his observations "colorimetrically" by direct inspection of the exposed lungs, also noted a rise in pulmonary blood-pressure and a blanching of the lungs after the same drug. It will be seen that the observations of all these investigators would tend to speak for a vasoconstrictor action of the nitrites.

After the effect of the nitrites on the arterial strip suspended in Locke's solution had been studied, the experiment was repeated, in order to approximate more to the condition in the living animal, by suspending arterial strips in blood-serum. Here too the same effect was observed. Finally the action of the nitrites was tested on strips of human pulmonary artery obtained from a fresh necropsy, and here too a vasoconstrictor effect was observed. It may be mentioned here that if preserved in fresh Locke's solution and kept in the ice-chest Macht has seen such an artery respond to drugs twenty-five days after the post-mortem.

In view of the foregoing observations, it will be seen that in causing a constriction of the pulmonary vessels, and at the same time being efficient peripheral and splanchnic vasodilators, the nitrites meet the ideal requirements for the therapeutics of pulmonary hemorrhage. Turning to clinical data, we find even there already some evidence of that being true. Francis Hare in 1906 reported nine cases of hemoptysis successfully checked by amyl nitrite. Rouget in 1905 reported ten similar cases. Grace-Calvert in 1907 speaks of having employed it successfully in pulmonary hemorrhage twenty times, and a few other cases are mentioned by Colman, Smith, and George Bouilard.

[Many others have done likewise.—Ed.]

SOME POINTS IN THE TREATMENT OF ACUTE ILEOCOLITIS.

In the *Lancet-Clinic* of March 14, 1914, SNYDER tells us that in the discussion of the treatment of acute colitis in the child the first thing to insist upon is that to be rational the treatment must be individual. There are, however, certain principles of treatment applicable to all cases. With the onset of the disease it is imperative that the intestinal tract be cleaned out. Snyder's preferences for this purpose are castor oil by mouth and normal saline solution for irrigation of the bowel. If there is troublesome or persistent vomiting, the stomach should be washed, the washing to be followed by the administration of broken doses of calomel until one-half to one grain is given, and still later followed by oil. Although the initial purgation and irrigation are essential, Snyder protests against the practice of giving a daily dose of oil and of continuing frequent irrigations. Thus practiced they are not only useless but they are absolutely contraindicated, in that they destroy all possibility of rest to the inflamed and ulcerated bowel.

If toxemia of grave nature accompanies the onset, a hypodermoclysis of salt solution should be given without delay. Given early in the attack a salt solution is often an excellent and sometimes necessary measure, but Snyder is convinced that after the heart has been weakened by the ravages of this

disease the subcutaneous injection of salt solution is not only futile, but it is capable of producing disastrous results by overcrowding the heart.

By stopping all food, by clearing out the intestinal tract, and if necessary by the use of salt solution subcutaneously, the toxemia in the majority of colitis cases promptly subsides and the disease becomes a purely local one, demanding for restoration to normal nothing so much as rest.

If peristalsis continues irritable and excited, it is the author's practice to use opium more and more freely. This drug has been subjected to so much abuse, and so much has been written about its dangers when used in the particular condition under discussion, that for a number of years he fought shy of it. To-day, however, he is willing to assert that without its use in acute colitis the disease is often unnecessarily prolonged and its dangers are frequently augmented.

There is no truth in the statement that children suffering from colitis do not bear opiates well. They bear them a great deal better than they do the wear and tear and the strain accompanying the irritable peristalsis. Once the intestinal tract has been relieved of toxic, decomposing, and irritating food residue, opiates should be called into quick service, and they should be given in amounts sufficient for the purpose intended. Snyder asserts he is only afraid of opium when its use has been postponed until the resistance of the child is at a very low ebb or when it is used in insufficient dosage. Recently he was in consultation with a physician who was attempting to control, in a year-old child, an excited peristalsis accompanying colitis by giving three drops of paregoric every four hours. He wants to say to his readers as he said to him—three drops of paregoric would not control the peristalsis in a flea suffering from a similar disease. When you give opium in these conditions give it early and give enough. When so given it is not nearly so dangerous as our old and time-honored friend, bismuth. The huge and oft-repeated doses of bismuth which must be given to secure results preclude any possibility of rest to the patient. The drug itself is sometimes impure. When it does not coat over the intestinal tract, it rolls along the canal in such bulky and irritating masses as to excite peristalsis and to provoke efforts at expulsion. When it happens to stick, it accumulates in quantities sufficient to dam back excretion and permit absorption of toxic substances from the foul and undrained areas of involved mucosa.

Snyder states he hopes the day is not far off when text-books will have less to say about the dangers of opium and a little more about the dangers of bismuth.

Rest, moreover, is not only to be assured by withholding further purgation, by withholding food, and by the use of opiates, but the environments of the child should be made peaceful and quiet. Many of these children are of such age as to be susceptible to the depressing influences of anxious faces, tears, and morbid and thoughtless remarks, which are too often seen and heard over the sick bed. The physician must handle such situations with tactful but none the less positive firmness. The child with colitis should be kept in bed in the recumbent position. Carrying or swinging the child in her arms may be the mother's right when that child is only bad and spoiled, but when that child has colitis it is not only a selfish but cruel right to assert. Make that plain to the mother and exact obedience to orders.

Again, some of these children with colitis are old enough to have been trained to use a vessel. The posture assumed and the straining that invariably takes place when the child is put on the chamber makes it quite certain that its use should be forbidden in this condition. And yet Snyder asserts he has time and again been forced to modify such an order by the determination and by the mental and physical anguish of his little patient. It is remarkable how much pain and suffering some of these children will endure in efforts to control the sphincter. They present a difficult problem. If the child is to be successfully persuaded that

it is all right to soil the napkin it can be done not by any erudite reasoning on the part of the doctor, but by the gentle assurance of the mother. In those cases in which all persuasion fails the chamber will have to be allowed, but the privilege of its use should be timed, and limited, not to minutes but to seconds.

The time for the resumption of feeding and the character of the food depend so much on the individual case that their discussion will not be undertaken in this paper.

Water should be given freely throughout the attack. Liberal quantities of water are especially indicated in the early part of the disease when the bowel movements are frequent and while food in other forms is being withheld. It is the custom of Snyder at this time to have the nurse or mother measure and chart the amount of water taken by the patient. If the amount is regarded as insufficient, it is supplemented by subcutaneous injection. This procedure, though rarely necessary, is a much safer and surer way than to rely on bowel injections to make up the deficiency. The lower bowel is in no condition to absorb even water. Furthermore, it is always wise to have a care lest further irritation result from the mechanical injury due to unskilled or too frequent use of the rectal tube.

THE TREATMENT OF TABES DORSALIS AND GENERAL PARESIS WITH SALVARSAN.

BATES, STRATHY and MCVICAR in the *Canadian Medical Association Journal* for March, 1914, say it is rather difficult, at the present stage, to offer a definite opinion as to the outcome of the treatment of paresis based on present statistics. In the natural course of events these cases show remarkable remissions. It is difficult to select cases, too, and the extensive cerebral changes found post-mortem in most cases render the prospect of inducing reparative changes by any mode of treatment discouraging. One can say, it seems, that if any success is to be attained it must be by means of the method used in treating other forms of syphilis—*i.e.*, intensive treatment controlled by the Wassermann reaction.

Deductions they have drawn from their results are as follows:

1. So-called parasyphilis is syphilis. Classification of the two as separate diseases is artificial and unnecessary.

2. The symptoms of tabes dorsalis can be greatly improved by treatment with salvarsan. Some cases can apparently be absolutely cured.

3. Results in the treatment of general paresis warrant active treatment of all early cases. A cure may be possible.

4. Best results are obtained in both tabes and paresis from intensive treatment—*i.e.*, one or two full doses per week.

CHRONIC MALARIAL CACHEXIA AND ITS RELATION TO NEURASTHENOID CONDITIONS.

In the *Boston Medical and Surgical Journal* of February 5, 1914, POPE has this to say of physiotherapeutic methods:

Massage, both manual and mechanical, is very valuable in the management of these cases, owing to its general tonic effect and its influence upon the nervous, circulatory, and eliminative organs. As has been shown for many years, massage and vibration are reconstructive, largely through their influence upon nutrition and through metabolic changes in the organism. That it has a beneficial influence in these cases has been very readily shown, where he has utilized it as the sole mechanical or physiotherapeutic remedy in conjunction with dietetic and hygienic control.

Pope uses electrotherapy in these cases: it is an adjuvant but possesses no specific value; it is useful in the treatment of certain local manifestations, especially the digestive disturbances and the constipation. Of course, in improving the functional activity of the gastrointestinal tract and bettering its evacuation, it becomes a contributing factor in the general upbuilding of the patient. Those currents best suited for these cases are the galvanic, using large enough pads to cover both spleen and liver;

the sinusoidal for its muscular effects upon the intestine; and the static wave current, per rectum and over the liver and spleen.

Hypotherapy he believes to possess a specific influence in this disorder, and the results obtained by its use have been such to him clinically as to depend upon it as the main weapon in the combat of these cachectic states.

Two classes of cases demand treatment, the bedridden and the ambulatory.

Where the case is bedridden, he commences the treatment with a cold sponge at 60° to 50° F., using a crash glove, and secures reaction by vigorous rubbing with a crash towel. As soon as the patient's reaction is well established, he uses the dripping sheet at 60° to 50° F. rapidly applied with good friction once or twice daily. As soon as the case is up and about the ambulatory method is employed.

Should a chill develop, the method usually employed is to order hot drinks of either plain or flavored water, lemonade, etc., with hot-water bottles to the feet and surrounding the patient, or the hot full bath at 102° or 104° F. for ten to fifteen minutes, followed by rapid drying and lying between blankets; these will give much comfort and shorten the attack. With the subsidence of the chill he usually waits one hour, and if there is no sweating and the temperature begins to rise he allows the patient to drink freely of cold water and orders the cold sponge at 60° to 50° F. applied singly to an extremity, then to the back, and finally to the chest and abdomen, being careful to dry each part as soon as it is sponged, and to use a crash mitten or rag in order to produce sufficient friction to dilate the surface capillaries. If, however, the patient should be sweating the parts must first be thoroughly dried, after which they are rapidly sponged with very hot water (110° to 115° F.), the mitten or rag being squeezed dry before being used for the sponging. Each part must be dried and immediately returned to the cover.

If it is believed that a chill is approaching and it is desired to abort the attack, the patient should be given large quantities of hot water internally and the hot full bath of 102° or 104° F. for ten to fifteen minutes, and kept warm until the threatened attack has passed.

As soon as the bedridden cases are able to get about, and for the ordinary ambulatory cases, he employs the following method:

1. A hot procedure to perspiration. For this purpose he employs the hot full wet pack, the full dry pack, the vapor, hot air, superheated dry hot air, or incandescent electric light bath; the latter is undoubtedly and by far the best heat measure in such cases, as it acts not only as a provoker of respiration, but accomplishes this and at the same time stimulates the patient.

2. A preliminary warm application. This may be a sponge, the dripping sheet, the hot half bath, full bath, shower, rain, needle, spray, or douche.

3. A cold application. This may be likewise a sponge, dripping sheet, cold half bath, effusion, shower, rain, needle, spray, or douche.

The best all-round combination for ambulatory cases with this disorder is as follows: Incandescent electric light bath to moderate or free perspiration, according to the strength of the individual; the needle, rain, or shower bath at 102° or 104° F. for one or two minutes reduced to 60° or 50° F. for one-fourth minute under twenty to twenty-five pounds pressure, followed by the Scottish jet douche to the spine (tenth dorsal to fourth lumbar), and over the liver and spleen at 105° F. or more under twenty pounds pressure reduced to 60° F.; the alternation should be hot douche one-half minute alternated with the cold douche for ten seconds, three to four alternations.

Following each application, the patient should be thoroughly rubbed and a reaction secured. By reaction is meant the pleasant glow, pinking of the skin, and tonic state of the circulation that directly results from the manifold reflexes, etc., that follow the cold application. It is advantageous for the patient to rest quietly after the treatment and to be instructed to drink eight to ten glasses of cold water daily.

Most of the cases that come under his professional care have been dosed to death with medicine; have taken calomel, quinine, arsenic, and many other drugs in varying forms and for long periods of time. From personal experience Pope asserts that very few drugs are of advantage in these cases, and that most of them are best employed by the hypodermic method. The first group consists of iron, arsenic, and quinine. He prefers to administer iron and arsenic hypodermically daily, and believes that there is a certain advantage in giving it in the morning before the hydrotherapeutic measures, as he believes that these favor its better distribution and action—in fact, he is inclined to believe, from clinical observations, that nearly all drugs can be given in smaller doses with better effect and surer physiologic action where hydrotherapy is employed. He believes that iron and arsenic are better in the cachexia than quinine. When an acute attack is threatened, or when one has taken place, the hypodermic administration of quinine bisulphate in from two- to four-grain doses will oftentimes spare the patient the nerve-racking influence of large doses by the mouth, and at the same time be far more effective when given in this way. It is astonishing the beneficial results that sometimes come from its use.

SEPTIC PUERPERAL INFECTION AND ITS TREATMENT.

VINEBERG, in the *Canadian Medical Association Journal* for March, 1914, says that having concluded from our bedside observation that we are dealing with a puerperal infection, our next step should be directed to endeavor to ascertain the form and the course it is likely to follow. To do this a careful local inspection should be made, followed by a bimanual examination of the pelvic contents and, if possible, by a digital exploration of the uterine cavity. The perineum and vaginal canal should be thoroughly inspected for any tear or abrasion, and if such is found a note should be made of the appearance of its surface, whether it be clean-looking or covered with a grayish membrane. If the perineum has been sutured, the sutures should be removed, so that the wound may be thoroughly inspected, remembering, however, that the infectious organisms may enter through such a wound and yet cause little or no local reaction. In such a contingency the infection rapidly becomes general and leaves us in no doubt as to the nature of the case. In the majority of instances, however, the organisms are not so virulent; they cause a local reaction and travel upwards along the blood or lymph vessels, more frequently along the latter. In that instance an exudate or peritonitis develops, with the signs and symptoms that accompany them. The treatment of infected areas in the perineum or vaginal canal should be based on general surgical principles of cleaning the wound and providing for free drainage. Next, the cervix should be exposed with a suitable speculum and note taken of its tears or wounds. Having failed to find any probable site of the infection in the perineum, vaginal canal, or cervix, the further step should consist in making thorough exploration of the uterine cavity with the finger or fingers. We are safe in asserting that fully 90 to 95 per cent of the cases of puerperal infection originate in the interior of the uterus. A very large percentage of these are due to placental remains. A digital exploration of the uterine cavity is not always easy of execution, and may call for general anesthesia.

It may be well to draw attention to the fact that placental residues, even of good size, do not always manifest themselves by hemorrhages or fetid lochia, as is generally stated. Vineberg has frequently observed them in cases in which neither of these symptoms were present. Having found placental remains, what is the treatment to be instituted? Here we encounter a great diversity of opinion. At the present time the trend is toward a "let-alone" policy unless there be hemorrhage. Vineberg is not in sympathy with such an attitude, and is of the opinion that the careful removal of such infected products of gesta-

tion will frequently arrest the process or aid very materially the economy to overcome the infection. How is the removal to be accomplished, with the finger or with a sharp or dull curette? Many a lance has been broken on this point. It seems a matter of less importance what is to be done and as to how it is done. One man may accomplish the object in view better with his fingers than he could with an instrument. Another feels safer with the use of the sharp or dull curette, Vineberg confesses to belong to the latter class.

A great deal has been said and written upon the dangers of breaking down the protection wall which nature forms underneath these infected tissues in the uterus. Based upon this fear, an author (T. J. Watkins, of Chicago) recently has advocated the packing of the uterus with gauze, in order to effect a separation and expulsion of the placental remains. It would be difficult to conceive of a more dangerous procedure. If we have learned anything in the past years in the matter of infection it is that there is no better way of making a local a general infection than by employing means to prevent drainage, and to place the infected area under high pressure. Every one to-day recognizes that a strip of gauze in the uterus, even as a drain, interferes with rather than facilitates drainage, leaving aside the fact that it is always increased by decomposition. If gauze used loosely as a drain acts just in the opposite manner, what will it do when it is packed tightly and kept in position for twenty-four hours?

After removing the placental remains, it is his custom to irrigate the uterus either with 50-per-cent alcohol or a weak solution of iodine. Thereafter the uterus is religiously left alone. Ergot, strychnine, and quinine are given in suitable doses to aid uterine contractions and involution.

The indiscriminate use of the curette cannot be too strongly condemned, and one cannot emphasize too forcibly the great harm that may be done when it is employed in a haphazard manner, as frequently is the case. His advice would be, when in doubt do not use the curette; usually the opposite course obtains, and because the patient has fever she is subjected to a curettage. It is scarcely necessary to add that the curette should not be used for septic and gangrenous endometritis; hence there is great danger of breaking through the protective zone which nature forms, leaving aside the impossibility of removing all of the diseased endometrium. It is doubtful, even, whether intrauterine irrigations in these cases do not do more harm than good. If the discharge be very profuse an occasional irrigation with some bland fluid to wash away the excess of discharge may be beneficial.

The formation of an exudate is, as a rule, a favorable omen and is nature's method of limiting the infective process.

A SIMPLE AND EFFECTIVE METHOD FOR DISINFECTION OF TYPHOID STOOLS.

Linenthal and Jones, in the *Boston Medical and Surgical Journal* of January 8, 1914, state that the addition of about a cupful of commercial unslaked lime and hot water to a typhoid stool will generate enough heat to kill the typhoid organism. While cold water may often suffice, it cannot be depended upon owing to the variable quality of the lime. Hot water from 50° to 60° C. will always give the desired results. The lime used should be in lumps, broken up in small pieces and distributed over the stool.

They believe that this is a simple, efficacious method, and should take the place of the various methods now recommended by local boards of health.

ORIGIN AND PRESENT STATUS OF THE EMETINE TREATMENT OF AMEBIC DYSENTERY.

Writing under this heading in the *Journal of the American Medical Association* of February 14, 1914, Vedder concludes:

1. Emetine is a true specific in amebic dysentery and hepatitis, and the results obtained by its use compare very favorably with the results obtained with salvarsan in syphilis.

2. The hypodermic use of the hydrochloride salt is the preferred method of treatment.

3. A large percentage of cases so treated continue to harbor *Entamœba histolytica* (often in the encysted and most dangerous form) in the feces for some time.

4. While in view of this fact it is impossible to state at present that patients treated by emetine will remain permanently cured, yet the prospects of obtaining permanent cures by this method are encouraging.

5. The presence of a considerable number of these chronic ameba carriers constitutes a sanitary menace to the community.

6. It is possible that the amebas may be removed from these carriers by a course of irrigations of quinine or silver nitrate.

7. Experiments have failed to show that emetine possesses any marked therapeutic virtue in bacillary dysentery, syphilis, rabies, or trypanosomiasis.

THE EFFECT OF DIGITALIS ON THE BLOOD-PRESSURE AND PULSE-PRESSURE IN THE PRESENCE OF CARDIAC DECOMPENSATION.

In the *Boston Medical and Surgical Journal* of January 8, 1914, LAWRENCE reaches these conclusions:

1. The effects of various drugs on the blood-pressure, as determined by experiments on animals, do not furnish reliable criteria for the administration of such drugs to man, since the effect may be quite different in the latter.

2. The pressure-raising effect of digitalis noted in animals and in healthy individuals does not occur, as a rule, when the drug is administered to individuals suffering from cardiac decompensation.

3. The cause of the cardiac decompensation does not appear to affect the action of the drug.

4. Digitalis preparations may be safely administered to patients suffering from arteriosclerosis, angina pectoris, or nephritic hypertension, if cardiac decompensation is present; under such conditions it rarely causes a rise in blood-pressure.

A COMPARISON OF THE ACTIONS OF CHLOROFORM AND ETHER ON THE BLOOD-PRESSURE.

Writing in the *Lancet* of February 28, 1914, FAIRLIE sums up the effects of the two anesthetics on the blood-pressure as follows:

(*a*) Chloroform. A fall of pressure is produced throughout the administration of chloroform. With the establishment of full anesthesia this fall amounts to at least 10 mm. and sometimes considerably more; along with this the pulse beats slower and a varying degree of pallor is present. Surgical shock during chloroform anesthesia produces a slight further fall of pressure. With the withdrawal of those two depressants—chloroform and shock—the blood-pressure exhibits a tendency to rise rapidly, and very often soon reaches a point a few millimeters below the patient's normal.

(*b*) Ether. Little alteration of the blood-pressure is produced by ether. It may cause a rise, it may maintain a constant level, or it may cause a fall. It causes more rapid and more forcible cardiac action, with dilatation of the smaller vessels (as evidenced by the flushing which occurs), the latter probably counteracting the former in maintaining the blood-pressure level almost constant. With intercurrent shock a considerable fall of pressure takes place, a fall almost equal to the combined effects of chloroform and shock. The subsequent recovery after severe shock is slow, some time elapsing before the blood-pressure approaches the normal level.

What influence do these considerations have in the choice of the anesthetic? In answering this question it is again necessary to differentiate with regard to the nature of the operation into (1) those cases in which only slight surgical shock is to be anticipated, and (2) those cases in which severe shock is to be anticipated.

1. *In Slight Surgical Shock.*—In all cases chloroform causes considerable lowering of the blood-pressure, whereas in this class of cases there is but little lowering of the blood-pressure under ether. With the latter anesthetic, therefore, the margin of safety

is greater than with the former. In this class ether is the anesthetic of choice.

2. *In Severe Surgical Shock.*—At the end of an operation in this second class the blood-pressure shows more tendency to reaction with chloroform than with ether; there is a more decided and better maintained rise with the former. This consideration, it seems, should go a long way as a guide to the choice of anesthetic. At a time when it is of vital importance that patients should be able to make use of all their resources, after chloroform anesthesia they are better able to do so than after ether.

Fairlie in no sense ignores the danger of chloroform as evidenced by the rapid fall of blood-pressure which it produces, particularly in the early stages of its administration. The only death under anesthesia which he has had occurred under chloroform eight minutes from the time of commencing the administration, and before the operation had been commenced. This case and other less serious experiences have been quite sufficient to impress upon him the care which is necessary in making the choice of anesthetic, and in the use of chloroform where it is chosen.

But there is another point of view, and one of value of which it is much more difficult to estimate—that is, the relative safety of the two anesthetics with regard to the period immediately succeeding operation. Is it not possible that the anesthetic may play a part in causing or averting death in the period subsequent to operation, as well as in the chances of rapid recovery? It must also be remembered that the chloroform danger can be lessened by employing ether for inducing anesthesia, in this way getting over the most dangerous part of the administration. Under those circumstances a change to chloroform produces a less decided fall of blood-pressure than where chloroform is used throughout.

After weighing up all those considerations Fairlie thinks that, in this second class, chloroform is the anesthetic to be chosen; the induction of anesthesia, however, being effected by means of ether. In this paper it must be understood that he is only considering the two anesthetics as they affect the circulation, and especially as they affect the blood-pressure.

The observations which led up to these conclusions extended over a period of three years, and were quite independent of work done by others, as only latterly has he consulted the literature on this subject. He finds that most of the writers have formed conclusions entirely opposed to his own. At the same time all the writers whom he has consulted have their opinions on the fact that during anesthesia chloroform produces a fall in blood-pressure, ether does not; and as far as he has been able to discover no one has continued observations on the behavior of the blood-pressure subsequent to operation.

Mummery made a series of observations on blood-pressure during operation. From these he came to the following conclusions:

There is a marked rise in the blood-pressure in the early stages of ether anesthesia, and the net result of all the investigations into the effect of ether anesthesia upon the blood-pressure shows that it tends to remain at its normal level or to be raised slightly throughout the whole period of anesthesia, any fall in blood-pressure which occurs during an operation being due to the steps of the operation and not to the anesthetic.

With chloroform anesthesia the results are almost the exact opposite of those with ether anesthesia. It has always been the opinion of London surgeons that ether anesthesia is safer in long operations and those where shock is anticipated than chloroform anesthesia. This fact, based upon clinical observation, is proved beyond all shadow of doubt by blood-pressure records of operations. Chloroform anesthesia is accompanied by a fall in blood-pressure during the whole anesthesia.

Walton, following up Mummery's investigations, agrees with his main conclusions. In dealing at the same time with the treatment of shock, however, he makes a statement which, it seems, is quite contradictory: "In no case should any form of stimulant, either brandy, strychnine, or ether, be ad-

ministered previous to or during the course of an operation." He then goes on to state that the administration of such stimulants leaves the patient in worse condition than if they had not been given. So that, while disapproving of ether as a stimulant, he recommends it as an anesthetic on account of the fact that it is a stimulant.

Barton, in speaking of the open method of ether administration, says: "Given in this way ether has the advantage over chloroform in that it is safer and tends to the prevention of shock during operation."

Blumfeld refers to the same subject: "Thus ether tends to keep up blood-pressure, and thus to diminish surgical shock. Chloroform, on the other hand, throughout an administration tends to cause a lowering of blood-pressure, and thus adds an additional degree to any surgical shock that may be caused by an operation."

In nearly all the literature too much emphasis seems to be placed on the conditions obtaining during anesthesia and too little on the subsequent state. Dudley Buxton, however, in an article on the relative merits of chloroform and ether in operations for exophthalmic goitre, refers to the latter point: "Though he had employed chloroform he was ready to believe that the open ether method or venous infusions of ether were useful methods. In the latter, however, there was a danger of collapse when the unnatural stimulation of the ether passed off."

The same writer, in a biographical article on Long, the discoverer of the anesthetic properties of ether, makes a similar reference: "The very safety of the drug (ether) became its chiefest danger; some etherists were so obsessed by the fact that ether does not lower blood-pressure or cause cardiac collapse through depression that they failed to recognize the perils incident to overstimulation, especially in asthenic persons."

Brown writing on "Post-operative Shock," after pointing out that shock is due to exhaustion of the cells in the vasomotor center, claims that chloroform narcotizes these cells and in this way prevents their energy being used up during shock, so that with the withdrawal of the chloroform they regain their activity. Ether, on the other hand, he thinks, does not possess this narcotic effect on the vasomotor cells, and may even act on them as a stimulant. In summing up, he says:

"And the conclusion to which I am led is that while ether is undoubtedly the safer anesthetic so far as the time during which the patient is under the influence is concerned, as regards the after-effects shock is much more likely to be lasting and serious when ether has been used for a prolonged operation than if we had recourse to chloroform and kept the vasomotor cells partially narcotized."

The last quotation is in agreement with Fairlie's own observations. Based on those observations he thinks that ether is the anesthetic of choice for short operations or for those operations where little shock is anticipated, while chloroform is better for prolonged operations and for those where considerable shock is anticipated.

NEOSALVARSAN.

BEESON presents these conclusions in the *Journal of the American Medical Association* of February 14, 1914:

1. The initial dose of neosalvarsan in most cases should not exceed 0.45 gm.

2. At least seven days should elapse before a second injection is given.

3. If, following several injections, signs of intolerance are noted, the dose should be kept at the same figure, and reduced if the symptoms do not disappear following further treatment.

4. Distilled water is the best solvent.

5. Administration in concentrated solution seems to be the superior method.

6. Distillation should be performed in an apparatus composed wholly of glass.

7. The intravenous method is the one of choice.

8. Continued headache should be regarded as indicating possible involvement of the nervous system.

9. Neosalvarsan has a most efficient ally in mercury.

TREATMENT OF SYPHILIS.

SWEITZER (*St. Paul Medical Journal*, November, 1913) advises the abortive treatment of primary syphilis by giving a number 6 dose of neosalvarsan intravenously. In one week another neosalvarsan is given. Then in a few days a course of mercury injections can be started and continued for six weeks. Finally one or two more doses of neosalvarsan complete the treatment. If favorably located the initial lesion can be excised. This is not of much use if the inguinal glands are much involved. After this abortive treatment the blood should be watched carefully for one or two years to see if it remains persistently negative.

The treatment of early cases by Finger is salvarsan in Wassermann negative cases of primary syphilis as an abortifacient. In Wassermann positive cases of primary syphilis and also in secondary syphilis with marked symptoms he prefers to omit it and use mercury. He cites 142 salvarsan fatalities in three years as against 70 fatalities with mercury in the last six years. The early Wassermann positive cases are the ones in which a danger exists of arsenical poisoning after the use of salvarsan. Acute nephritis, hemorrhagic encephalitis, and enteritis have all been causes of death.

The neuro-recurrences according to Finger are of two kinds, those due to syphilis and those due to the toxic action of the arsenic.

The author states that he has never had any severe effects nor any neuro-recurrences from salvarsan and neosalvarsan.

A good method of procedure with an early secondary case is to give an energetic course of mercury injections for six or eight weeks; the neosalvarsan can then be given and repeated in one week. This can be followed by another course of mercury and some potassium iodide, thereafter by two more neosalvarsans.

After such a course of treatment the Wassermann reaction often will be found negative. Some confusion exists as to how to proceed from this point. Such a patient is not cured, and it would be better not to make any Wassermann test at all than to jump at the conclusion that the patient is well. The proper procedure is to give the patient one month's rest, then another course of mercury, then a little longer rest and more mercury, continuing this for from three to five years. The rest periods are gradually lengthened until they extend to six months.

Late syphilis, according to Finger, can stand salvarsan, and a late syphilitic with active symptoms or a positive Wassermann (and here about 30 per cent of the patients will give a negative) can be given an intensive combined course of neosalvarsan and mercury with potassium iodide.

A positive Wassermann does not necessarily mean that the skin lesions or internal disorders are due to syphilis. It does indicate, however, that the person is suffering from an active lues.

A Wassermann negative does not mean that the patient is not syphilitic, nor does it mean that the patient is cured. Diagnostically a negative is of little worth. If a negative is obtained in a patient with a previous positive, consideration must be given the amount of treatment, time since treatment, and time that the patient has had the disease. A negative may turn positive even after two years. Once a negative is obtained we should endeavor to keep it negative.

VENEREAL DISEASES AS WE SEE THEM TO-DAY.

MCDONAGH (*The Practitioner*, December, 1913) contributes a timely article on this topic, holding that the craze for organism hunting and having a Wassermann done in every case of syphilis is considerably hindering advance in treatment. An early diagnosis needs clinical experience, not expert bacteriological knowledge as to how to look for spirochætæ, and how to be able to recognize the spirochæta pallida when seen. The first step in the prevention of the dissemination of disease is to make the teaching of venereal diseases compulsory and to appoint men with a special knowledge to undertake it.

For the healing of open lesions quickly, salvarsan will easily be given the first place.

As to gonorrhea, the posterior part of the urethra may be affected by direct extension from the anterior portion without the symptoms ever showing themselves in the acute form. The treatment of acute prostato-urethritis is as much a puzzle as ever. In Germany the local treatment is very drastic and great use is made of the urethroscope. The advantages of this instrument are, first, that the patient is impressed, and, secondly, that the manipulator is delighted if he uses anything. More cases of prostato-urethritis are kept going by over- than by under-treatment; an instrument should never be passed unless it be needful, nor should an injection fluid ever give pain. Cases often get well from mere suspension of treatment. There are many cases in which the organisms have intruded so deeply that no amount or kind of treatment will ever reach them, consequently one is bound to admit that certain cases of gonorrhea are incurable.

Vaccines occasionally work the miracle when everything else has failed; but more often than not in uncomplicated urethritis vaccines have no value, and even when they benefit immediately a recurrece will set in sooner or later. The disadvantages incident to their use are that they seldom cure, have frequently to be repeated, and even being able to obtain a negative complement fixation test gives no absolute guarantee that the disease will never return again.

As to the best form of vaccine, the palm must certainly be given to the sensitized form. These vaccines can be given intravenously with beneficial results, and provided the vaccine is sensitized with a suitable serum, doses of several thousand million can be given with impunity. Intravenous administration is especially useful in severe cases of iritis, when the minimum amount of reaction is desired. In cases in which the reaction is severe and in patients who are extremely susceptible to toxins the symptoms can not infrequently be abolished by adding cholesterol and lecithin, which seem to be able to bind on to anything, without chemically altering the substance. It is not impossible that the whole immunity problem will find solution in the physical or physicochemical properties of lipoids and allied bodies. Among the blessings incident to the attainment of this end the author for one advises the doing away with the side-chain theory and the coinage of words which complicate, but do not explain or advance science.

As to spondylitis deformans, McDonagh holds that gonorrhea is the one and only cause of this condition. Unless the case is obtained early treatment is unavailing. He mentions one case which after two recurrences of gonorrhea observed in the course of many years developed an arthritis of the left tarsometatarsal joints, which spread in the following order to the other joints; right knee, left knee, temporomaxillary, both shoulder and cervical vertebral joints. Under local treatment and injections of an autogenous vaccine the patient improved, except that pain down the whole spine set in and increased. A mixed vaccine was made of the organisms obtained from the prostatic secretion, with the result that a severe epididymitis followed, and the patient became worse than he had ever been before.

When observed by the author the patient walked slowly with the aid of a stick, had a pronounced stoop, head was thrown forward, and shoulders were raised to avoid moving spine. He was found to have a chronic prostato-urethritis and vesiculitis, an acute tenovaginitis of the extensor sheath of the left wrist; the spine was tender, but quite movable. Under the usual local treatment, coupled with the internal administration of potassium iodide and daily injections of a sensitized gonococcal vaccine up to 1000 million, with a further weekly injection of the maximum dose, the patient completely recovered, and within a few weeks the movements of the spine were natural and elicited no pain.

As to chancroids, the soft sore is not infrequently complicated by an enlargement of and, may be, suppuration in the nearest set of lymphatic glands. The bacilli reach

the glands by direct extension along lymphatics which run beneath the corium. Fine lymphatic channels also exist in the corium itself, and they are not infrequently implicated. If there is a superficial lymphangitis two complications may arise: (*a*) ulceration of the penis, (*b*) ulceration in one or both groins.

The ulcer on the penis is generally near the root; it is deep, has red and undermined edges, is painful, and secretes a seropurulent fluid which has a peculiar odor. The ulcer may occur soon after the soft sore has appeared or not for some time after it has healed. Under local application of iodoform and camphor-phenol the ulcer rapidly heals.

The ulcer, or ulcers, for there may be several in one or both groins, commence quite superficially as little furuncles; they spread quickly, are not deep, have a bluish edge which is deeply undermined, and secrete a most obnoxious but characteristic seropurulent fluid which may be sufficient to soak the dressings, changed three or four times a day. The ulcers are extremely painful, and show little tendency to heal; they also may appear soon after the initial affection, or not for years—in one of the author's cases five years elapsed. If left untreated, or unless exactly the specific treatment is given, they will remain unclosed for years. The name which has been given to this kind of ulcer is ulcus molle serpiginosum.

The writer states he has had four cases under his care, and in all he found Ducrey's bacillus, but it differed from the organism usually found in soft sores. Even in soft sores great morphological differences may be met with in the various specimens of Ducrey's bacillus, but the characteristic feature of the bacilli found in ulcus molle serpiginosum is that they are mostly, and in enormous quantities, intracellular; hence the explanation of the chronicity.

The evil-smelling discharge was, in the author's case, due to a proteus which disappeared under an autogenous vaccine made therefrom. To be absolutely certain that the ulcer was due to Ducrey's bacillus, in one case he inoculated the same patient's arm with some material from under the edge of a fresh ulcer, and obtained, after the usual incubation period, a typical soft sore.

So far as treatment is concerned, operative interference makes matters worse, and *x*-rays and radium are useless; but zinc ionization may help, provided the wounds are dressed in the meantime with iodoform and camphor-phenol, and increasing doses of iodides are given internally. In fact, a cure can be brought about by the two last named remedies alone, but it may be necessary to give as much as 200 grains of potassium iodide daily, and to continue the drug over a long period before obtaining the result desired. In one case he tried intravenous administration of tartar emetic, with such success that the wide-spread ulceration, which had lasted for two years, healed within three weeks after four injections.

The author suggests cerebrospinal syphilis, and possibly also tabes and G. P. I., are born when the syphilis first appears, but remain dormant for a varying period, depending perhaps upon the quantity and quality of the antibodies in the system, only to appear as symptoms late in the course of the disease. The increased frequency of syphilitic nervous affections in recent years, explained by some observers by the spirochæta pallida having a greater predilection for nervous tissue, is, in the author's opinion, far more likely to be due to the increase in the efficiency of treatment which sterilizes the systemic part, and by so doing allows the nervous part to run rampant.

It is very seldom that treatment given by the skin, muscle, or vein is ever able completely to cure a case of cerebrospinal syphilis, tabes, or G. P. I., owing to the fact that the diseased area never gets sufficient of the drug prescribed, and because degeneration of nerve tissue has already resulted. Homer Swift and Ellis have obtained good results by injecting intraspinously serum rich in antibody. The treatment is probably only palliative, and even to obtain a satisfactory result several injections are necessary. Moreover, there are not many

people in the world who would care to have a lumbar puncture done several times on an off chance.

As regards the treatment of syphilis, we have a long way to go yet, and to be able to cure nerve syphilis a drug will have to be found which can be injected intraspinously with impunity.

Great as has been the work which Fournier did for syphilis, it is odd how little his statistics are borne out by actual facts. The present-day feeling is that syphilitic nervous affections are on the increase. Fournier definitely states that over 90 per cent of the cases which developed tabes were not treated at all, or treated inadequately.

A common syphilitic symptom which is frequently overlooked is headache. The headache is persistent—that is, it may last for years unless properly treated, and may be localized or distributed about the skull, but is most frequently complained of either on the vertex or the occiput; radiating pains down the neck are a common accompaniment. The area may be tender, the patient is usually depressed, and loss of memory is a common symptom. On examination, nothing abnormal is discovered, Wassermann's reaction is generally markedly positive, and cerebrospinal fluid is nearly always normal. The symptoms disappear very quickly under salvarsan, but slowly under mercury and iodides, unless the former is given by inunction. This kind of headache is due to vascular trouble, and if it is accompanied by clinical signs, such as unequal pupils, optic neuritis, etc., it is most usual to find the blood normal, and the cerebrospinal fluid with an increased cell count, excess of globulin, and a positive Wassermann reaction. Such a case indicates trouble in the meninges and generally reacts well to treatment, but is seldom cured, and may be followed by a degenerative or so-called parasyphilitic condition later.

Although our knowledge of syphilis has advanced by leaps and bounds during the last few years, we have all committed a grievous error in immediately taking for gospel everything we were told. No discovery of an organism was accepted with greater rapidity than that of the spirochæta pallida made by Schaudinn and Hoffmann in 1905. The trust therein has become so profound that the mere suggestion of anything different is at once received with contempt and resentment. If we pause and ask ourselves: "Why is the incubation period of syphilis so long? Why do not one or two injections of salvarsan cure every case? Why has no one ever seen a spirochæta pallida divide?" then our faith begins to wane.

If syphilis is conveyed by the passage of spirochætæ from one person to another, ought not the initial lesion to begin to show itself two or three days after intercourse, as is more or less the rule with bacterial infections, viz., ulcus molle, gonorrhea, diphtheria, etc.? The diseases which have a long incubation period are nearly all due to protozoa. The incubation period is long because the infective organism has to go through a cycle of changes before it can give rise to symptoms. Since the spirochæta pallida is a protozoan—an assumption which one may safely make, owing to its rapid destruction under salvarsan—is it not possible that it is only one of the phases in the life-cycle of the syphilitic parasite?

The action that salvarsan has on spirochætæ in general is phenomenal. No spirochætæ are found in films made from the discharge from a chancre, after forty-eight hours, following a single injection. If the action is so marked, even on the surface of a lesion, how much more pronounced must it be in the deeper parts? In fact, all the spirochætæ must be, and no doubt are, killed by the first or second injection. In spite of this, recurrences occur again and again. If the spirochæta pallida is the sole cause, why has not every observer seen division?

The points brought forward in favor of the spirochæta being responsible for everything syphilitic are, first, that the spirochæta has been obtained in culture, and secondly, that animals have been infected with the disease from such cultures.

It is the greatest mistake possible to place too much reliance upon cultures, especially

in the case of protozoa. In bacteria and fungi, the widest morphological differences exist between the same organism in the body and that met with in culture, not to mention the variations according to the medium the organism is grown upon.

The cause of syphilis is a minute organism which is especially rich in nuclein, extraordinarily resistant, and to which the name sporozoite may be given.

As to the Wassermann reaction no one understands it, and all draw deductions from the results, which may be entirely wrong. Moreover, the test contains flashes which cannot be explained. The author is inclined to corroborate Noguchi's luetin test in tertiary and latent syphilis. Moreover, the test is not actually specific, as cases do occur in which the reaction in non-syphilitics is positive.

THE WASSERMANN REACTION IN CHILDREN.

WATSON (*Glasgow Medical Journal,* October, 1913), having examined 1130 sera of his own cases, holds that his conclusions regarding this study should be of some value. The 100 controls were all negatives, these being in children without stigmata or specific history in the family. Of the second 100, taken at random, attending the out-patient department, 29 gave a positive result. Twelve of these showed clinical evidence of syphilis, and 17 were unsuspected, although 8 of the latter number were mentally defective. In these 17 unsuspected cases without evidence elicited by direct examination, it was found by Wassermann that a parent, brother, or sister exhibited a positive reaction. In most cases several members of the family gave positive results. Sixteen cases of congenital heart disease were positive in every instance. In 15 cases of meningitis with more or less hydrocephalus a positive result was obtained in every one. Eighty-five children, the offspring of tinkers, gipsies, and tramps, were examined. All gave positive reactions. Some of the cases appeared healthy.

LOCAL ANESTHESIA IN OPERATIONS FOR HERNIA.

JACOBSON (*American Journal of Obstetrics,* November, 1913) notes that local anesthesia in abdominal surgery finds its greatest application in hernia operations. By many surgeons it is now considered the anesthetic of choice for such operations. The use of local anesthesia for hernia operations is always indicated in the aged, or in the presence of severe organic diseases, such as cardiac lesions and diseases of the lungs, liver, and kidneys. It is particularly indicated in strangulated hernia.

It is well known that only a small percentage of patients with hernia are operated, and that deaths from strangulation are not uncommon. The chief reason given by patients for not submitting to hernia operations has been the fear of a general anesthetic. Patients readily consent to hernia operations when informed that it can be done without pain and without a general anesthetic.

The disadvantage of local anesthesia is that of operating upon a conscious patient. This, however, is largely overcome by the use of preliminary hypodermic injections of morphine in combination with atropine or scopolamine.

Operations for inguinal hernia can be performed just as thoroughly under local anesthesia as with a general anesthesia. This is also true of umbilical hernia in patients who are not too obese.

The solutions of novocaine and adrenalin employed range from ½ to 2 per cent. The ½- and 1-per-cent solutions are most frequently used. The quantity of the solution to be employed varies with each operation. According to Braun, as much as 200 Cc. of a 1-per-cent solution has been used by Axhausen, although the average amount is only 50 to 60 Cc. The ½-per-cent solution, which appears to be the standard solution, is used by Braun and many others in quantities as high as 200 Cc. without the slightest toxic effect. The quantity of adrenalin added to the solution ranges from three to ten drops per ounce.

The preparation of the solution is simple.

The novocaine, adrenalin, and distilled water in the desired amounts are placed in a flask and boiled for three minutes.

The syringe used should be of the Record type, of 10-Cc. capacity, with a right-angled needle, the needle being about 2½ inches long. The part to be operated upon is surrounded by a novocaine barrier which is either rhomboid or diamond in outline. The superficial structures are first "blocked" by placing the solution directly under the skin. The deeper structures of muscle and fasciæ are blocked by introducing the needle into them, but two insertions of the needle are necessary when the barrier is diamond in outline; with the rhomboid outline about six punctures must be made. The introduction of the needle is rendered painless by infiltrating the skin with the Schleich method. The individual nerves, when encountered in the field of operation, should be anesthetized separately. The solution must also be deposited around the nerve tracts which supply the parts to be operated.

It is absolutely essential that fifteen to twenty minutes elapse from the completion of the injections to the beginning of the operation. Attempts to operate before the expiration of this amount of time will be met with failure. After proper wait, the operation is begun and proceeds with the same ease as with a general anesthetic.

Supplementary injections into the deeper structures after the skin has been incised may be used. The author's experience with this method of local anesthesia is limited to thirty-six operations upon twenty-eight patients.

CÆSARIAN SECTION.

DAVIS *(American Journal of Obstetrics and Diseases of Women and Children,* December, 1913) advocates the following operation:

The abdomen is opened by a median incision 8 to 10 centimeters long from above down to the umbilicus. One or two gauze pads wet in warm normal salt solution are placed in the abdomen above the fundus of the uterus to hold back omentum and intestines. Often the uterus is found twisted upon its long axis, usually toward the right side. An assistant standing beside the patient opposite the operator makes pressure with his hands outside against the side walls of the abdomen, rotating the uterus so that its anterior wall looks directly forward, and so regulating his pressure that the uterus is held well up to the abdominal opening until it is emptied of its contents—child, placenta, and membranes—and until several of the deep sutures are in place and tied. This, however, is in no sense a maneuver to control hemorrhage. The uterus is carefully opened with a scalpel so as to retain the membranes intact, by an incision a little longer than the abdominal opening in the midanterior surface, from just below the fundus downward. If the placenta is found beneath this wound, a not infrequent occurrence, it should be pushed aside or torn through, and with the hand in the uterus the membranes should be separated from the uterine wall while they are yet distended. Neglect of this precaution often means that they must be removed piecemeal, sometimes with much difficulty and delay, after the child is delivered and retraction and contraction have begun, and at the time when dangerous uterine hemorrhage is most likely to occur.

The anterior thigh of the child, or the one which is most readily found, is grasped, delivered, and breech extraction is done, turning the child after delivery of the shoulders, so that it faces toward the mother's face. Then with the middle and index-fingers of the right hand astride its neck and with the same fingers of the left hand in its mouth, making traction on its lower jaw, the head is carefully delivered without any sudden jolting or laceration of the uterus. An assistant stands ready with two long clamps in which he grasps the umbilical cord. The cord is cut between the clamps, and the child is taken away to have respiration established, preferably into an adjoining room, so that the operating staff's attention may be given entirely to the mother. Davis then hooks two

fingers of the left hand into the uterus at the upper angle of the uterine wound and places and ties the upper deep suture, leaving the ends long. This is repeated at the lower angle of the wound, and then with the right hand in the uterus the placenta, membranes, and clots are removed.

The first assistant now discontinues abdominal pressure and holds the uterus up to but not out of the abdominal opening by the long ends of the sutures already in place. The uterine wound is closed by two layers of sutures. The deep layer is of No. 2 chromic gut, interrupted and about one centimeter apart, passed through the uterine peritoneum, close to its cut edge, well out into the muscle and down to but not through the endometrium, and out in reverse order on the opposite side. A double turn is taken in the first knot, which will then maintain its position without the necessity of its being held by forceps in the hands of an assistant at the risk of cutting or weakening an important suture. The suture is drawn tight enough to bring the edges of the uterine wall into accurate apposition, yet avoiding tension which would blanch and constrict the tissues. The sutures are tied in three knots and cut short to the knot. The entrance and exit of the deep sutures are close to the cut edge of the uterine peritoneum, and the short ends of these sutures render it more easy to completely bury them by the next layer, which is a continuous suture of No. 1 chromic gut. Beginning at the lower angle of the uterine wound this suture is inserted and tied, and the knot is covered by folding the peritoneum over it with subsequent stitches. Passing the needle well outside of the tissue included in the deep layer of sutures and parallel to the line of uterine incision, the peritoneum and some uterine muscle are caught up, alternately on one side and then the other, folding them over and completely burying the deep layer, much after the manner of the Cushing stitch in closure of intestinal wounds. This leaves no raw surface or sutures or knot ends exposed, and thus reduces to a minimum the chances of subsequent adhesions of adjacent tissues to the uterine wound. The deep interrupted suture holds the two faces of the uterine wound in apposition through the whole depth of the wound. If any interrupted suture gives way it affects only the tissue held by that one suture. If a continuous suture gives way at one point, its force is weakened throughout its entire length. Every precaution should be taken to avoid adhesions and to secure strong, firm union of the uterine wound, so that the uterus may involute normally and take its position in the pelvis with its mobility unrestricted by adhesions, and in the event of subsequent pregnancy the uterine scar will not rupture.

The pads are removed and the abdominal wound is closed in three layers. Dry sterile gauze pads are held in place by a snug adhesive strap across the abdominal wound, which is an added support to the abdominal sutures. Elsewhere the dressings and binders are loose, so that the uterus, which is now in the lower part of the abdomen in the position occupied by a uterus after normal labor, may have free movement. The compression of the abdominal wall against the uterine wall is thus avoided, and likewise the risk of adhesions between the two, as was the case in which the tight abdominal binder was employed. The uterus is not delivered from the abdomen at any time. The patient is placed in bed, and the head of the bed is elevated to favor drainage and descent of the uterus. In the uncomplicated case she suffers the pain and discomfort common to laparotomies for other causes, but no more. Morphine in ⅛-grain doses is given by hypodermic injection as needed, and the abdominal distention is relieved by a retained rectal tube or by a saline irrigation. Usually the mother nurses her child, and at the end of forty-eight hours she is treated as a normal delivery. On the eighth day post partum she sits up in a chair, and by the twelfth day she is ready to leave the hospital. Several of the author's patients have insisted upon

going home on the tenth day, while others who were ready to go home on the twelfth day, for one cause or another, found it inconvenient to leave at that time, or else they lived at a distance and were advised not to attempt to travel so soon. In the uninfected cases the blood and liquor amnii which finds its way into the peritoneal cavity does no harm, and no great effort is made to remove it.

The following advantages are incident to the use of the small median incision entirely above the umbilicus. There is no danger of adhesions between the uterine and the abdominal wounds, and the uterus is therefore allowed to involute normally and take up its position in the pelvis without restricted mobility.

In the midline the abdominal wall is very thin; no important structures are divided and the tissues are quite elastic, so that a small opening is all that is necessary for the delivery of the child. The small abdominal opening offers much less chance for the escape of intestine and omentum and less opportunity and necessity to handle the abdominal contents. Located above the umbilicus there is much less probability of the subsequent occurrence of hernia through the cicatrix, for it is above the most dependent part of the abdomen which is subjected to the greatest strain when the patient is in the upright position. More support is also given at this point by the recti muscles, as they tend to come together toward their upper attachments.

STENOSIS OF THE PYLORUS IN INFANCY, WITH REPORT OF CASES.

KEEFE (*American Journal of Obstetrics*, November, 1913) notes that stenosis of the pylorus found in infancy is due to a hyperplasia of the circular muscular fibers of the pylorus and to a slight degree the involvement of the longitudinal fibers. This mass of muscle, which feels at times almost as hard as soft cartilage, throws the mucous lining of the pylorus into longitudinal folds, and the mucous membrane being also swollen there is produced a narrowing or complete obstruction of the lumen of the pylorus. This condition of the pylorus is permanent, as shown by autopsy months following a gastroenterostomy. The pyloric tumor was found the same as at the time of operation.

Dodd has made numerous skiagraphs following the ingestion of bismuth by patients who had been operated upon for stenosis of the pylorus by a gastroenterostomy. He found that no bismuth passed the pylorus in any of the cases examined, thus showing that the original cause of the obstruction persisted.

When an early diagnosis is made one can at once resort to surgery with a better chance for success. The high mortality is due in a great measure to delayed operation.

The disease usually is found in a male infant who has been breast-fed and is healthy in appearance. From one to five weeks after birth it is noticed that he regurgitates the milk after feeding, and later rejects about all the food taken. The vomiting may occur immediately after nursing or be delayed for one-half hour or more. At times the fluid taken may be retained for two or more feedings, and then the quantity taken at all the feedings is vomited. The child may vomit but once or twice in twenty-four hours. The food is expelled suddenly and with considerable force, and may come through the nose as well as the mouth. The bowels are constipated and the movements are usually green, unhealthy, and slimy. Changing the diet does not arrest, for any length of time, the loss in weight, which soon becomes alarming.

The abdomen is distended in the epigastric and contracted in the lower abdominal region. The abdomen should be examined immediately after the infant has been fed for visible peristalsis of the stomach. The peristaltic wave is seen passing transversely from left to right and terminating in the right hypochondrium. Deep palpation, just outside the nipple line

and about one-third the distance from the umbilical level to the costal margin, reveals a hard, olive-shaped mass ¾ inch long by ½ inch wide, in the majority of cases.

While a pyloric tumor may be palpated in most of the cases, it may be so covered by the liver that it would be impossible to detect it.

The characteristic symptoms are: vomiting in a healthy breast-fed infant, usually a boy; later, vomiting propulsive in character; loss of weight; constipation; prominent epigastric region; visible peristalsis of the stomach; palpable pyloric tumor.

The medical treatment consists in washing the stomach twice a day with a solution of bicarbonate of soda, one grain, to one ounce of sterile water; rectal injections of one-half pint of normal salt solution three times a day; small quantities by mouth of hot water, modified milk, peptonized milk, meat juice, or albumin water. Feeding through the nose, by aid of a small rubber catheter, with water two ounces, barley water one ounce, may be of value.

The operative procedure consists in making a vertical right rectus incision into the abdominal cavity, thus exposing the pyloric tumor. An opening one-half inch long is then made through the wall of the stomach about an inch from the pylorus. Through this opening a small-sized sound or probe is passed into the lumen of the pylorus and retained there. The serous and muscular coats forming the pyloric tumor are divided with a knife down to the mucosa. This incision is parallel to the long axis of the bowel. The hypertrophied muscle on either side of the incision is now separated from the mucosa laterally over half the circumference of the pylorus and a small portion of the muscle removed, which allows accurate transverse approximation of the wound. This procedure permits the subsequent easy passage of larger sized sounds until the lumen of the pylorus is sufficiently patulous, and by this method the longitudinal folds of the mucosa are smoothed out without injury. The longitudinal incision through the serous and muscular coats of the pylorus is now closed with Lembert sutures of linen, so that the line of union is at a right angle to the long axis of the bowel. The result is that the pylorus is wider at this point than it was before the operation.

The wound in the stomach is closed with two rows of sutures. The abdomen is closed in the usual way, approximating the peritoneum, muscles, and skin.

Gastroenterostomy is attended with a high rate of mortality, about 50 per cent, save in the hands of expert surgeons. Deaths have occurred from intestinal obstruction several weeks following the immediate effects of the operation. Jejunal ulcers may form at the site of the stoma, giving rise to serious trouble.

The operation by pyloroplasty may be performed with success by a surgeon of average skill with less trauma to the tissues and consequently less shock to the patient than the operation of gastroenterostomy. We directly remedy the defect at the site of the obstruction and leave the parts more nearly as nature intended that they should be.

THE USE OF CITRATE SOLUTIONS IN THE PREVENTION OF PERITONEAL ADHESIONS.

Pope (*Annals of Surgery*, January, 1914) has conducted an experimental study with the end in view as indicated by the title of his paper. He notes that before a peritoneal exudate can form in the peritoneal cavity with its resultant plastic agglutination, there must be the liberation of that hypothetical ferment, thrombokinase, its activation of prothrombin in the presence of calcium, and the production of thrombin, which as an active enzyme converts fibrinogen into fibrin.

The production of fibrin deposits or peritoneal adhesions in the abdominal cavity must be influenced by some method inhibiting the process of ferment activity. We must inactivate thrombokinase or bind the calcium in the serous exudate.

Experimental research seemed to show

that there is not an active thrombin element in the normal, untraumatized peritoneal cavity; that trauma to the endothelium of the peritoneum, even exposure to the air, causes liberation of an active thrombin ferment, supposedly thrombokinase; that the presence of intestinal or gastric juice with its ferments retards or abolishes the action of thrombokinase.

It is a fact that pepsin, trypsin, and other powerful enzymes will inactivate thrombokinase. It is also a fact that thrombokinase only is active in the presence of a calcium salt. And this salt may be bound or neutralized by citrates, oxalates, or sulphates.

Adhesions were favored by multiple scarification of the colon. Into the peritoneal cavity of some of the rabbits thus treated was poured half an ounce of a number of sterilized solutions. The incisions were then closed with silk. In the series examined none presented a worse appearance than those experimented upon with camphorated oil.

Petrolatum gives a slimy, greasy emulsion appearance, with quantities of opaque lymph and isolated firm adhesions between the intestines. The abdominal incision is poorly healed, and its edges are insecurely agglutinated and appear poorly vascularized. There was one death incident to the use of iodine.

The citrate of soda gave distinctly the best results. After an impartial scarification, which under normal circumstances at the end of a week would give a nasty peritoneum, with the addition of citrate solutions there was an abdomen practically free from exudate, with no adhesions. These findings were in such striking contrast to all others that they seemed incredible. The 2-per-cent citrate solution seemed most serviceable. This remained longer in the abdomen than normal solutions, giving traces of its presence when colored with the methylene blue after forty-eight hours, while normal solutions disappeared in half this time. In peritoneal postoperative inflammation the height of the storm is past in forty-eight hours. The solution is present when most needed. When the insulted, traumatized endothelium is pouring out plastic exudate, with a large content of fibrin ferment, it is met by the inhibitory action of citrate of soda. On the introduction into the abdomen of these hypertonic salt solutions with or without citrates, there is always a marked peristalsis with an accompanying contraction of the abdominal muscles, which often rouses the animal from anesthesia, and seemingly is painful. This quickly passes, and there is no evidence of local irritation—in fact, reddened and ecchymosed intestines become less vascular and more normal in color.

These laboratory results seem applicable only as a mild preventive measure during abdominal operations, which ordinarily tend to leave more or less agglutination and troublesome postoperative adhesions.

It is not suggested that large quantities of solution be left in the abdominal cavity, although in the absence of pus it probably is not detrimental so to do, but that the usual operating-room solutions of normal salt have added to them 1 or 2 per cent of citrate of soda.

SPINAL FLUID IN DIAGNOSIS.

BALL *(Interstate Medical Journal,* December, 1913) prefers the intervals between the third and fourth lumbar vertebræ for making puncture, which lies about the middle of a horizontal line passing from one iliac crest to the other. The middle line is to be preferred because the opening between the vertebræ is larger. The minimum amount of fluid necessary for examination purposes should be taken—6 or 7 Cc. is usually sufficient. By the withdrawal of so small a quantity of fluid unpleasant after-effects can usually be avoided. The patient should be kept in bed after puncture for twenty-four hours. Headache, nausea, pain in the back of the neck, and stiffness and pain in the back sometimes follow. Tabetics and paralytics are sometimes free from these disagreeable symp-

toms. Some 30 fatal cases have been reported in the literature.

The first observation of clinical significance is one in regard to the pressure of the spinal fluid, which can be estimated roughly by the rapidity of flow, from 30 to 60 drops a minute being within normal limits. Estimation may be made more accurately by connecting the cannula with a small rubber hose which on its distal end is attached to a vertical glass tube ½ cm. in diameter and graduated in mm. Pressure in normal adults is about 130 mm. There is an allowed variation of 50 mm. Pressure is often extremely high in cerebral arteriosclerosis, attaining to 300 mm.

The next thing to be observed is the color. If this be absolutely clear the various purulent forms of meningitis may be excluded. In the very earliest stages of these infections this really may not obtain. Blood is found in subdural hemorrhage, fracture of the skull, and cerebral apoplexy. Nonne says that it is comparatively easy to differentiate between a recent and an old hemorrhage. In recent hemorrhage the spinal fluid becomes, after centrifuging, as clear as water. Where the hemorrhage has occurred some time before, it presents a light-yellow appearance, indicating the presence of hemoglobin. This yellowish or amber color of the spinal fluid has been called xanthochromia. It occurs in other conditions also where hemoglobin or red corpuscles cannot be demonstrated. It has been observed in compression of the cord, intramedullary tumors, and intramedullary syphilis. Nonne says it appears almost as if a new clinical syndrome, which may be called the compression syndrome, may be spoken of. This consists of a marked increase of globulin without lymphocytosis, and either with or without a yellow staining of the spinal fluid.

The Nonne-Apelt test for increase of globulin is made by adding a highly saturated solution of ammonium sulphate which has been permitted to cool to an equal quantity of spinal fluid (usually 1 Cc. of each). One liquid is poured gently on the other. If the globulins are increased there occurs a more or less distinct gray ring at the plane of contact. After this preliminary observation the mixture is well shaken, and the result may be read off within three minutes. A cloudiness or opalescence occurring in the tube inside three minutes is read as positive; according to the quickness of appearance of the opalescence and its intensity, the test is read as weakly or strongly positive.

It gives a means, in doubtful cases, of differentiating between functional and organic affections of the central nervous system. Its presence always means organic disease, though its absence does not exclude it. It is almost always found in syphilitic nervous affections—100 per cent of spinal lues, 95 per cent of tabes and paresis. The increased cellular elements have a particular significance in diagnosis. From 0 to 5 cells may be regarded as normal, from 6 to 9 as border-land, while more than 10 cells constitute a pathological increase. Whenever an inflammation or even a congestion is present in the meninges a lymphocytosis may be found. It is usually present in tubercular meningitis, poliomyelitis, multiple sclerosis, and in all the nervous affections of specific origin. Indeed, a moderate degree of lymphocytosis is found in 30 to 40 per cent of all cases of syphilis.

THE TREATMENT OF PUERPERAL STREPTOCOCCEMIA WITH INTRAVENOUS INJECTIONS OF MAGNESIUM SULPHATE.

HARRAR *(American Journal of Obstetrics,* November, 1913) concludes a paper with case reports as follows:

1. In the quantities and dilutions described, magnesium sulphate is absolutely harmless when administered intravenously to women suffering with puerperal infection.

2. Magnesium sulphate is of more value early in the course of the infection than after secondary localization has occurred.

In the chronic cases of secondary thrombophlebitis or pyemia it does not appear to be of benefit. Its action seems to be chiefly upon the organisms circulating in the blood.

3. It shortens the course of the bacterial toxemias in which the bacteria cannot be demonstrated in the body by culture, and anticipates the establishment of a bacteriemia; and finally,

4. It has reduced our mortality in puerperal bacteriemia, especially in streptococcemia, the most fatal form of puerperal infection, from 93 to 20 per cent.

His technique of injection is a 2-per-cent solution of chemically pure magnesium sulphate prepared with freshly distilled water. This is filtered and sterilized in half-liter flasks in an autoclave. This solution will not hemolyze human red blood cells, and he finds by experience that prepared in this way it will not cause any temperature reaction in the patient. Formerly a one-per-cent solution of magnesium sulphate in physiological salt solution was employed, and a chill and sharp temperature rise frequently followed the injection. A simplified salvarsan apparatus is preferred for the injection, but the ordinary infusion set will answer the purpose quite as well. It is important not to cut down upon the vessel, as by direct puncture the same vein can be used a number of times. As many as eight punctures of the same vein have been made on different occasions. The secret in getting into the vein is to make it markedly prominent. This is done by temporarily placing a constricting rubber tube about the upper arm just tightly enough that the faintest pulsation may still be felt in the radial artery. If the constriction about the upper arm is too tight, the arterial as well as the venous circulation will be cut off and the vein will not distend with blood. The needle is inserted in an oblique direction, the spurting of blood from the open end indicating proper entrance into the vein. The rubber tube of the reservoir with the solution flowing in is then rapidly slipped over the shoulder of the needle. The reservoir is held at not more than one foot elevation, which will run in 400 Cc. of the solution in about twenty minutes. The injection should be made much slower than the ordinary saline infusion.

The patient experiences a sensation of heat toward the end of the injection, and frequently feels faint, although the pulse usually gains in quality. A small drink of hot whisky or aromatic spirits of ammonia will steady her. Occasionally the respiration assumes a sighing quality, but no decrease in rate or in depth of the respirations has been observed. It is quite evident that the dangers are not so marked, the drug is not so toxic, when given intravenously as when employed intraspinously where it is applied directly to the nerve tissue. As much as 400 Cc. has been given by hypodermoclysis together with the same quantity intravenously, representing 16 grammes or 250 grains of the drug, with no alarming effects; whereas by intraspinous injection for the production of anesthesia, or in the treatment of tetanus, Meltzer advises 1 Cc. of a 25-per-cent solution per 20 pounds of body weight, or about 25 grains for a 130-pound individual, as the safe limit. The injections should be repeated every second or third day according to the course of the infection as revealed by the temperature chart.

The method has now been employed in fourteen cases at the Lying-in Hospital. In five of these there was a streptococcic bacteriemia, as proved by blood culture. The other nine were all severely infected women with high temperatures and acutely ill with streptococcic toxemia, with pure growth of streptococci on uterine culture, but with negative blood cultures.

In forty-six cases of puerperal infection with blood cultures showing streptococci, previous to 1910, but three survived, a mortality of 93 per cent. In the five cases with positive blood cultures since 1910, treated with intravenous injections of magnesium sulphate, all but one have recovered, a reduction in the mortality from 93 to 20 per cent. While this is a small series upon

which to base percentages, a perusal of the case reports and of the temperature charts will show that they were desperately ill patients and of the class heretofore doomed to a fatal issue.

ANTIMONY IN SYPHILIS.

While most investigators in chemotherapy have devoted their attention to compounds of arsenic, the claims of other drugs have perhaps been somewhat neglected. It is, therefore, interesting to notice recent researches with antimony, a drug with certain chemical resemblances to arsenic. Not long ago Neisser suggested that it might possibly be of value in syphilis. Tsuzuki conceived the idea of replacing the arsenic of salvarsan by antimony, and the benzol ring by tartaric acid, a substance which is well known to have affinities for certain bacteria, and even to act as a nutrient medium for them. According to Ehrlich, the action of salvarsan on the spirochæta is due to the presence of (OH) groups which combine with the corresponding haptophore groups of the parasites. Tartaric acid also contains (OH) groups which may act in the same way. Hence, according to Tsuzuki, the action of these antimonial compounds may be explained on the basis of Ehrlich's side-chain theory.

After experimenting with several compounds on rabbits inoculated with syphilis, Tsuzuki found that the best results were obtained with a combination of antimony oxide with potassium bitartrate and ammonium — $SbO(C_4H_4O_6)_2+K(NH_4)_2H_2O$ —to which he gave the name of "antiluetin." This substance was then tried in human syphilis with remarkable results.

Details of 10 cases are reported, including primary, secondary, gummatous, and cerebral syphilis, in all of which the symptoms were greatly improved or disappeared. In several cases a cure was obtained with antiluetin after energetic treatment with mercury and iodide had failed, and one case of gumma which recurred after salvarsan was treated by antiluetin. In a case of syphilitic optic atrophy the sight was improved. The drug is given by subcutaneous injection between the shoulders. The initial dose is 0.025 gramme, soon increased to 0.05 gramme, given daily or every other day until a total of 0.15 to 0.3 gramme has been reached. If this is well borne, a further series is given. The dose required for therapia sterilisans magna is estimated at 0.75 gramme.

Tsuzuki concludes that antiluetin is a powerful antisyphilitic remedy, but that the best results are obtained when it is combined with mercury and iodides. Further experience with this new remedy will be awaited with interest, for since antimony is less toxic than arsenic, it is not impossible that salvarsan may be dethroned by antiluetin.—*British Medical Journal,* Nov. 29, 1913.

A CASE OF INTRA-ABDOMINAL OMENTAL TORSION.

Armstrong *(Interstate Medical Journal,* December, 1913) records a case in the service of Dr. Andrews. The patient complained for one week of a constant, dull, aching, localized pain in the right hypochondrium, accompanied by occasional hiccough, but no nausea, vomiting, jaundice, or other symptoms. Past history negative except for yellow fever four years ago. There was rigidity over the right upper abdominal quadrant and marked tenderness below the costal arch, together with a definite resistance over the same area. The diagnosis of cholecystitis was made, but on opening there was found a twisted loop of omentum forming a ball 4 or 5 cm. in diameter, of a purplish-red color and with distended veins. This was removed.

Approximately 120 cases have been reported in literature to date. Ninety per cent of the cases have occurred in connection with hernia. The affection is commonest in middle life and in males. The symptoms are usually mild. Vomiting occurs in 50 per cent of cases, but is usually not excessive. Constipation is rare and

sometimes absent. The tumor can sometimes be felt. Correct preoperative diagnosis is rarely possible. Death-rates in operative cases have been quoted by Gillette as 13 per cent, but early operated cases recover without exception. Removal of the strangulated portion is a proper surgical procedure.

PROGRESS OF RADIUM THERAPY.

SAUBERMANN (*Surgery, Gynecology and Obstetrics,* December, 1913) states that in the light of present-day knowledge the indications for radium therapy are: (1) rheumatism of the joints and muscles, acute and chronic; (2) arthritis — subacute, chronic, deformative, and gonorrheal; (3) neuralgia—intercostal, deformative, and gonorrheal; (4) sciatica, including inflammation of the nerve ends; (5) gout, uric acid diathesis; (6) tabes dorsalis, diminution of lightning pains; (7) catarrh of the antrum and frontal sinus; (8) arteriosclerosis; (9) blood diseases; (10) constipation; (11) diabetes and glycosuria; and (12) nephritis.

The beneficial clinical results in this varied list of diseases are due to physiological actions the existence of which can be proven in living organisms. Some of the experimental results demonstrate the following facts: (1) Radium emanation promotes the growth and multiplication of healthy cells and the decay of morbid cells; (2) in man, the emanation produces diuresis; (3) radioactive water stimulates the digestive tract and produces catharsis; (4) the uric acid and urea content of the urine is markedly increased; (5) vasodilatation is produced; (6) the viscosity of the blood is diminished; (7) the blood-pressure is lowered, probably because of vasodilatation and the viscosity of the blood; (8) metabolism is increased, especially that of hydrocarbons; (9) digestion both in the stomach and in the intestines is rendered more active; (10) there is a nerve-soothing effect which may aid to check insomnia; (11) sexual activity is increased; (12) the effect on the blood is leucocytosis followed by leucopenia, with increase in the number of the red corpuscles.

The cause for these physiologic effects is not so easy to determine. There is reason to believe that they are due to an increase in the activity of body ferments. At least it is easy to prove experimentally that ferment action is greatly increased by the influence of radium, and as a working basis it is assumed that such is the action within the human body.

Radium increases the activity of ferments as would a catalytic agent, either starting chemical changes or hastening their action if already in progress. The result is increased oxidation of the products of metabolism. This oxidation in diabetics takes the place of oxidation by the normal ferments, the function of which is said to be disturbed in diabetes, although it is true that the symptoms of neuritis have been aided by radium treatment more often than the glycosuria.

The results in nephritis, arterial changes, etc., also are explained as being the result of an increase in the ferment action caused by the radium. One of the facts upon which this conclusion is based is that in artificial nephritis, etc., the ferments are destroyed by the poisons that produce the disease.—*Arch. Röntg. Ray,* 1913, xviii, 98.

DISPENSARY TREATMENT OF GONORRHEA.

In an extremely valuable contribution on this subject SANFORD (*Cleveland Medical Journal,* December, 1913) records the fact that of 100 cases but 12 could be said to be cured. Eighty-eight per cent, he states, are still going about uncured, with the possibility of spreading the infection further. Nor is there any adequate hospital provision made for those uncured, even though a large proportion of the 88 per cent thus leaving the dispensary were too sick for dispensary treatment. All private hospitals refused them admission to their open wards, and the city hospital had no space for them. He suggested that it would be

an economic saving to the city to give an adequate number of ward beds in its municipal hospital for cases of venereal disease with acute disabling complications. The dispensary physician can very largely influence the results obtained in the clinic by the human interest he takes in his patients.

It is to be noted that the basis of cure was not the disappearance of discharge, but a negative vaccine test. Sanford states that during the last year and a half in private practice he has repeatedly advised patients to marry in whom a "morning drop" was present, but in whom the blood has repeatedly been found negative. Thus far he has had no reason to regret his action, healthy children having been born as a result of the marriages, and no symptoms having been reported on the part of husband or wife.

Concerning the complement fixation, Rockwood in the same journal records a further experience with this test in about 200 cases. He concedes that the surest diagnostic test will be an isolation and observation of the specific organism. Blood tests represent the opposing forces of resistance which the patient has furnished in meeting the onset of disease. Except in cases of natural immunity they must be aroused either by the disease itself while immunity is being acquired, or, in some instances, such antibodies may be produced by some method of treatment, as in the use of bacterins, in which case the immunity thus created is artificial. The presence of specific antibodies is sufficient to guarantee the presence at some time of the bodies toward which they are antagonistic.

The blood serum is well adapted as a means of furnishing evidence of specific antibodies, and a specimen of blood serum for antibody examination has the great advantage of being homogeneous, any portion representing an exact proportionate combination of the same constituents. The complement fixation test is essentially a search of the blood stream for gonococcal antibodies. In cases of acute gonococcal urethritis of short duration the blood shows no evidence of antibodies. These do not appear in sufficient amount to respond to the fixation test until the end of the third week. Up to this time the most available means of diagnosis lies in finding the Gram negative intracellular diplococcus in the urethral pus. When the question arises as to whether this is a new infection or an exacerbation of an uncured former attack, this can be answered by an early fixation test; for a positive result indicating the presence of gonococcal antibodies when secured before the third week may be taken as evidence of an exacerbation of an old infection.

A chronic urethritis incident to the use of prophylactic irritating injections can after the third week be distinguished from the gonococcal urethritis with the blood-stream test. In a total of nearly 500 tests covering all classes of cases, five negative reactions were secured in four patients, 1 per cent, where Gram negative diplococci were present in the urethral smear. No cultures were made, so there is no evidence that the organisms were or were not true gonococci. In chronic gonococcal urethritis of long duration in which no gonococci could be demonstrated in the discharge, and in which the date of infection varied from six months to twenty years previously, in 55 cases, 33 gave positive results. In the negative 40 per cent there were several cases in which the urethritis was induced by stricture formation, and, of course, the presence of gonococci is no longer needed to account for symptoms arising in such conditions.

Probably the most serviceable application of the test is found in cases clinically cured. In this group will be found those who wish to be assured of their fitness for matrimony. In a series of 122 cases clinically cured, 19, or 15 per cent, still gave positive blood reactions at the time of test, though it must be remembered that it is not always true in these cases that they still harbor gonococci when the blood remains positive; for a period of several weeks must be al-

lowed for elimination of antibodies after the infection ceases before a negative blood test can be expected. Such cases should, however, he kept under inspection as long as the blood remains positive, and under no circumstances should the candidate for matrimony be given a clean bill of health in such event. In local complications of gonorrhea in the male, such as epididymitis and prostatitis, 75 per cent in a series of 42 cases gave positive blood reactions. In none of the remaining 25 per cent of negative cases was the gonococcus found in urinary shreds or urethral smears, although each gave a gonococcal history. These negative cases were of three classes: those which had received recent instrumentation of the urethra; those in which surgical procedures afterward disclosed tuberculous lesions; and those which had had previous attacks of acute epididymitis during the gonorrheal stage, after which the epididymis remained indurated but not acutely inflamed at the time of test.

Attention has been called to the fact that antibodies are produced by the use of bacterins. Hence cases so treated are for the time being ineligible for the fixation test, since there is no means of distinguishing a positive reaction due to such treatment from one due to the infection. The use of vaccines should always be postponed until the positive fixation test is secured, for the latter is to serve in diagnosis, and in cases tested for proof of cure a sufficient length of time should elapse after the last dose of vaccine to allow the antibodies thus artificially acquired to disappear. Two or three months is the period which most investigators advise waiting, but it is evident that much depends upon the quantity and efficiency of the vaccine used, as well as the method of administration. Most investigators report at least 90 per cent of the arthritis cases positive when the condition is an acute one of gonococcal origin.

Evidence that a gonococcal infection of the vagina alone will give positive findings is lacking. Schwartz and McNeil report 10 cases of vulvovaginitis in children tested by means of complement fixation with no positive findings. When the infection extends beyond the vagina, the reports of various workers indicate a large percentage of positive reactions in cases of undoubted gonococcal infection of the internal genital tract. Proper distinction must be made between pelvic disorders which are post-gonorrheal and those due to an active gonococcal focus.

A positive fixation reaction has never been secured where a gonococcal infection was known to be absent.

A general study of the question seems to show that in this test we have a means of indicating the presence or absence of an active gonococcal focus which may be considered accurate, except in the early stages, in over 80 per cent of all cases.

INTRAVENOUS INJECTION OF CONCENTRATED SOLUTION OF NEOSALVARSAN.

KATZ (*Münchener mèdizinische Wochenschrift,* Jahrg. 60, Nr. 42, 1913) has studied the effect of injection of concentrated solution of neosalvarsan upon the spirochæta and found that, when the injection was given at 11 A.M., by 7 P.M. most of the spirochætæ were dead and the remainder much less active, and that by the next morning all had disappeared not to return. The effect was the same whether 0.3 or 0.6 g. was given. Altogether 63 patients have been treated to 110 injections. Experience shows that when given in concentrated solution the result from neosalvarsan is fully as good as with salvarsan, and better than when given in dilute solution. The influence upon the Wassermann reaction is very favorable. After four weeks' treatment with at most four injections combined with mercurial treatment the reaction is usually negative, or at least weakly positive, and a week later without further treatment it has become negative. The researches of Altmann and Zimmern have shown that within a space of eight days twice as much salvarsan is eliminated in the urine when 0.4 g.

in 100-Cc. solution is given as when 0.4 g. in 8-Cc. solution is given. The same is true of neosalvarsan, and it is obvious that the longer it is retained within the body the more powerful is its curative influence. This method is, on account of its simplicity, quality of being well borne by the patient, and its curative value, the best of all methods of administration.

THE INJECTION OF CONCENTRATED SOLUTION OF OLD SALVARSAN.

DREYFUS (*Münchener medizinische Wochenschrift,* Jahrg. 60, Nr. 42, 1913) states that the injection by means of a syringe of a concentrated solution of salvarsan (0.1 to 0.5 g. in about 35 Cc. of double distilled water) offers certain advantages over the generally practiced method of injecting dilute solutions of 150 to 220 Cc. The number of subjective and objective reactions is considerably less than when large amounts of solution are injected. A properly directed salvarsan treatment implies 12 to 15 injections of salvarsan within the space of several weeks. Doubtless the stress put upon the circulation is less when at each injection about 40 Cc. instead of 250 Cc. are given intravenously. It appears, as has been shown by Zimmern, that the salvarsan is longer retained by the body when given in concentrated than when given in dilute solutions. When given in large amounts of fluid there is greater activity of the kidneys and consequently more rapid elimination of the salvarsan. By the use of a concentrated injection the sodium chloride used in the dilute solutions may be dispensed with. This not only simplifies the technique, but also enables us to avoid the use of a material which may be the source of an unfavorable reaction.

The entire apparatus (made by Lautenschlager, Frankfort a. M.) used in giving the concentrated solution may be sterilized by twenty minutes' boiling, thus avoiding the usual time-consuming method of sterilization. In mentally excitable patients there is much less trouble in making the injection as the procedure is less formidable. For the physician who makes a number of injections in succession the technique is much more simple and much time is saved. The effect upon the kidneys is the same whether dilute or concentrated solution is used. If nephritis is present, however, only dilute solutions should be employed. In syphilitic disease of the circulatory organs only small doses of salvarsan, or preferably neosalvarsan, should be given, and these in concentrated solution. In giving the concentrated solution it is absolutely essential that the injection be made directly into the vein, as the introduction of the solution into the tissues outside the vein is very painful and may lead to thrombosis. But this applies only to the misuse and not to the proper use of the method.

RADIUM IN CANCER.

PEARCE GOULD (*British Medical Journal,* February, 1914) in an article on this subject holds that the true therapeutic use of radium rests upon its selective affinity for cancer cells, and not upon a general caustic or destructive power. It is akin to salvarsan with its wonderful selective affinity for the treponema pallidum. He believes we are warranted in saying that in radium we have an agent that in many cases can be used in the treatment of cancer with great hope of success, and that the selective action upon cancer cells marks it out from all other known remedies for this disease; but this same experience also shows that it would be a gross exaggeration to speak glibly of radium as the "cure for cancer" in the sense that it will deal with any and every case of this disease. Such is not the case, as we use it at present; but remembering that on the one hand the nature of cancer is unknown and most variable in its manifestations, and on the other hand that radium is almost the youngest of the known chemical elements, and has been studied but for a few years, and by relatively few investigators, there is good ground for hope that in the time, which will surely come,

when we shall unravel the secret of the nature of cancer and know more of the properties of radium, and how to use them better and to control them, we shall have a great extension of the therapeutic value of radium in cancer.

REVIEWS.

PHARMACOLOGY: CLINICAL AND EXPERIMENTAL. By Dr. Hans H. Meyer, Vienna, and Dr. R. Gottlieb, Heidelberg. Authorized Translation into English by John Taylor Halsey, M.D. Illustrated. The J. B. Lippincott Company, Philadelphia, 1914.

The object of this book upon "Pharmacology" is well described in its subtitle, namely: "A Groundwork of Medical Treatment, Being a Text-book for Students and Physicians." It contains eighteen chapters, which are written by either Meyer or Gottlieb. Gottlieb opens the volume with a discussion of the pharmacology of the motor nerve endings; of the central nervous system; of the sensory nerve endings; and of the vegetative nervous system. This is followed by a chapter upon the pharmacology of the eye, pharmacology of digestion, by Meyer, and so on, until one or other of the authors has covered the entire pharmacological field in connection with the circulation, the muscles, the blood, heat regulation, respiration, sweat, and metabolism. At the close of the consideration of each drug a brief bibliography of important papers is appended. As usual, there is almost no reference to any pharmacological researches other than those which have been carried out in German laboratories, which is unfortunate in view of the fact that so many important investigations have been carried out in England and in American laboratories. This is particularly true in regard to the matter of heat regulation. Only one page is devoted to the influence of cold baths, and the only reference which is given under the text devoted to the antipyrin group is that by Schuchardt in regard to the antipyretic influence of aniline, in 1861. Possibly, this chapter on the antipyretics is the least satisfactory in the book.

In the chapter on anesthetics there are three lines in italics which we think are not justified by experience, and which are prone to produce trouble for members of the medical profession. Thus, in discussing the avoidability of anesthetic accidents the authors state that "in the great majority of cases these accidents may be avoided, for they are practically always the result of faulty management and incautious dosage of the anesthetic." Such a statement does not need to be criticized so much as it needs to be contradicted. It is, of course, true that faulty management and incautious dosage may cause death, but death sometimes occurs from an anesthetic when neither one of these faults is present. So, too, in this chapter research outside of Germany is entirely ignored; no reference for example being made to the epoch-making papers in England and America concerning postanesthetic toxemia after chloroform. Only four and one-half pages are devoted to local anesthetics other than cocaine, and of these four and one-half pages more than three are taken up with the chemical formulæ of these drugs. Throughout the book pharmacopœial preparations of Germany, England, France, and the United States are ignored, and doses of the various drugs are not given.

The reader of this notice has perhaps concluded from these criticisms and notations that the book is of little value. This is an erroneous conclusion, for as a book on Pharmacology, in distinction from one upon Therapeutics, it contains a very large amount of valuable information. The work of translation has been unusually well done by one who has already won for himself a place as a prominent American pharmacologist. We differ from him, however, in his Translator's note advising the use of copper sulphate as an antidote in phosphorus

poisoning, as Thornton many years ago showed that animals which received sulphate of copper as an antidote for phosphorus died sooner than those which received the same dose of phosphorus by itself.

In conclusion, therefore, it may be said that Meyer and Gottlieb's book is one which every teacher of pharmacology will be glad to have and one which he can advise his students to read, but it is not one which can be used by the general practitioner, nor by the student who is to pass a practical hospital examination in what is commonly known as Therapeutics.

THE PRINCIPLES OF PATHOLOGIC HISTOLOGY. By Frank B. Mallory, M.D. Illustrated. W. B. Saunders Company, Philadelphia and London, 1914. Cloth, $5.50 net.

A treatise on Pathologic Histology has long been needed in this country, and the profession will welcome a book by such an experienced worker as Dr. Mallory. He has based it almost entirely on his own observations, and thus placed it in a class quite by itself as recording personal findings and opinions. The contents are arranged in two parts, General and Special Pathologic Histology. The first has 78 pages on Inflammation, including Repair, 48 on Retrograde Processes and the substances associated with them, 125 on Special Injurious Agents and their lesions (including the most common bacteria and parasites), and 160 on Tumors. In the Special part, the lesions of various organs and systems are taken up in detail. Many of the illustrations are from drawings, and as a rule are excellent.

The book is a storehouse of knowledge, and for those who are fairly well grounded in pathologic histology will prove most valuable in furnishing the results of years of study by a careful observer; to these it can be heartily recommended. To students, who are not competent to weigh the personal interpretations of the author and are easily swamped by details, the book will not prove of unalloyed benefit. Many of the subjects are not presented in the orderly sequence that is necessary for the classroom, tuberculosis being one of these. The consideration of tumors, because of attention to cellular details, lacks correlation with clinical features that manifestly lessen its value. From a strictly histogenetic standpoint the classification of tumors according to the type of cell may be most accurate, but this does not make for clearness nor for a common ground between pathology and clinical medicine and surgery. Thus fibroma and fibrosarcoma are classed together as fibroblastomas because they arise from fibroblasts. They grow at all rates of speed, and "to the slower-growing tumors the term fibroma is applied, while those which grow more rapidly are classed under the term fibrosarcoma."

The reviewer does not wish to detract from what is undoubtedly a most valuable book, but for the reasons given he feels that when used as a text-book by beginners in pathologic histology it will need to be accompanied by many judicious explanations by the teacher. A. G. E.

THE PATHOGENESIS OF SALVARSAN FATALITIES. By Dr. Wilhelm Wechselmann. Authorized Translation by Clarence Martin, M.D. The Flemming Smith Company, St. Louis, 1914 Price $1.50.

It may be well said that Wechselmann has probably the largest experience with salvarsan of any man in the world from the clinical standpoint. As the translator points out, it is an interesting question as to just what position salvarsan and neosalvarsan are to hold in future in regard to syphilitic infection. As may be imagined from the title of the book, the author's purpose is to teach greater caution in salvarsan therapy. While it is true that hundreds of thousands of doses have been given without disastrous results, it is also true that in a considerable number very alarming symptoms or death have been induced, even when the injections have been made with skill. These deaths are all the more shocking because the dose is usually given for a condition which does not immediately jeopardize life. Wechselmann believes that these fatalities are to be considered as true salvarsan deaths, or, in other words, that the patients would not have died had it not been for the introduction of the drug

into their veins. The book closes with a summarization of the cases which Wechselmann is familiar with, either in practice or in medical literature, in which death resulted from the intravenous or subcutaneous injection of the drug. As Wechselmann's experience is based upon more than 25,000 injections, his conclusion that salvarsan is much less toxic than mercury is of extraordinary interest, and he states that with increasing experience with salvarsan, whereby the technique of its administration has been improved and the adjustment of the dose become more accurate, there has been a continuous decrease in evil symptoms. The author considers it is of the greatest importance that the urine should be carefully examined chemically and microscopically, and that this is more than ever important, when both mercury and salvarsan are being used. He states most emphatically that if the combined treatment is employed, mercury should be given very carefully many days after the last salvarsan injection, and that this rule should never be reversed. In the closing pages of the volume Wechselmann rather repudiates a statement made in his opening pages when he says that "in the great majority of cases of death salvarsan has not been the distinct cause of death, but rather an indeterminate factor."

THE INTERNATIONAL MEDICAL ANNUAL. A Yearbook of Treatment and Practitioners' Index. Thirty-second Year. E. B. Treat & Company, New York, 1914. Price $3.50.

This is the American Edition of the "Medical Annual" published in Bristol, England, and largely contributed to by English authorities. We note among the list of contributors in this country Lawrason Brown, Edward M. Packard, George L. Richards, and Beverley R. Tucker. There is one German contributor in the person of Professor von Noorden. The design of the book, as most of our readers know, is to provide a summary of medical literature. The present volume opens, as have its predecessors, with a review of therapeutic progress for 1913 by Frank J. Charteris, who states that there has been no striking advance in therapeutics during the year 1913, and who adds that a good deal of work has been done by Americans in the investigation of pharmacopœial drugs, but "the general result is unsatisfactory." He also says that interest in salvarsan and neosalvarsan is gradually ceasing and the profession is beginning to recover faith in mercury, and finally he states that lactic acid therapy is out of favor, and even vaccine therapy is less in evidence than in former years. This is pessimistic with a vengeance, and while it is largely true, it is perhaps an exaggerated way of stating the facts. Professor von Noorden writes upon Thorium, and the statement is made that thus far treatment with preparations of the thorium group has by no means proved a panacea for the general practitioner's use, but remains in the hands of those who have acquired special skill and experience in its employment. Emphasis is laid upon the fact that it is an unsafe form of energy to play with.

The important subject of tuberculin is considered by Brown and Packard. No better authorities could be chosen to give the profession conservative views in regard to this important subject. The authors state that 1913 has provided little advance in the scientific use of tuberculin, that its use largely rests upon an empírical basis, and that as a rule only its advocates write about it. More important still, they say that they have always been puzzled by reason of the fact that, use tuberculin how they will, they can never bring about such happy results as many of its ardent supporters claim; and last, that so far no statistical proof has been adduced to show that tuberculin is much superior to other forms of treatment in many patients. As the readers of the GAZETTE know, this has been our view as expressed in leading articles ever since tuberculin was first introduced as a therapeutic agent.

Some emphasis is laid by Charteris upon the experiments of Jona as to the value of adrenalin given internally to prevent the rapid absorption of poisons. Jona calculates that three ounces of 1:10,000 adren-

alin solution is necessary to be given a patient as soon as seen after the poison is ingested, and while preparations are being made for the use of the stomach pump.

TEN SEX TALKS TO GIRLS. By Irving David Steinhardt, M.D. Illustrated. The J. B. Lippincott Company, Philadelphia, 1914.

Dr. Steinhardt is the author of another small volume entitled "Ten Sex Talks to Boys." Both of these volumes are intended for "children of fourteen or over." These talks have appeared during the last year in the *New York Medical Journal*, and for this reason their scope is familiar to a considerable number of our readers.

Needless to say, the author is dealing with a difficult subject, but he has been singularly successful in his efforts. At the close of each chapter there is a series of questions designed to emphasize the chief points which the chapter has considered. Personally, we think that this volume should be used by girls of sixteen or eighteen rather than by children as young as fourteen years of age, as much of the information given deals with impregnation and the prevention of venereal disease. The last chapter deals with the question of when and how the baby should be weaned and what signs indicate the approach of the change of life, with a consideration of the precautions necessary at this time. Surely these are rather advanced subjects for a girl of fourteen.

Exactly how much sex information should be given to young persons is one of the great questions of the day which will be solved only by time and practical experience.

THE TREATMENT OF NEURASTHENIA. By Dr. Paul Hartenberg. Translated by Ernest Playfair, M.B., M.R.C.P. The Oxford University Press, New York, 1914. Price $2.00.

This small book is intended to describe the means which the author follows in the treatment of that somewhat indefinite condition known as neurasthenia. To use the author's words, "Here is offered the results of my experience with the hope that it may prove of some use to practitioners." One hundred and thirty-seven pages are devoted to treatment, earlier pages being devoted to a consideration of neurasthenia in general. We have long been of the opinion that only certain physicians, possessing peculiar qualities of heart and mind, are capable of treating this type of case, as the treatment must, to a large extent, be of a psychotherapeutic nature. To those who are interested in this limited field the book can be commended as illustrating the personal views of the author. We are not sure that it will aid the general practitioner materially, since many of these cases require institutional courses of treatment which the general practitioner is not prepared to provide.

A MANUAL OF CLINICAL DIAGNOSIS BY MEANS OF LABORATORY METHODS. For Students and Physicians. By Charles E. Simon, B.A., M.D. Eighth Edition, Enlarged and Thoroughly Revised. Illustrated. Lea & Febiger, Philadelphia, 1914. Price $5.00.

There are few books in any department of medicine which have been as successful as Simon's Clinical or Laboratory Diagnosis. To have reached an eighth edition within a few years after the first appeared is an achievement most enviable.

The opening chapter deals with the blood, and every method of examination of this tissue, or fluid, which is of value is discussed, both chemical, microscopical, and serological. One hundred and forty-five pages are devoted to this chapter. It is followed by one of three pages dealing with the secretions of the mouth, and one of thirty-six pages upon the gastric juice and the gastric contents. This, in turn, is followed by one of fifty-six pages upon the feces, and there is a chapter of twenty-six pages on the sputum. As illustrative of the full scope of the work it is interesting to point out that almost two hundred pages are devoted to the chemical and microscopical examination of the urine, although only six pages are devoted to the cerebrospinal fluid. We hope that with the next edition some statement may be made as to the value of estimating the urea content of this fluid in cases of uremia. There is a

chapter upon transudates and exudates. The closing chapter of the first part of the book consists in a bacteriological appendix which covers twenty-five pages. Part II of the book, which covers fifty-one pages, is devoted to a consideration of essential factors in the laboratory diagnosis of various diseases, and may be considered as a clinical summarization of the matter discussed in the pages which we have already spoken of.

Simon's Clinical Diagnosis is probably the best book for the physician to use in his clinical laboratory.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles. Edited by Henry W. Cattell, M.D. Volume I, Twenty-fourth Series, 1914.

We have for so many years noticed the appearance every three months of "International Clinics" that our readers must be familiar with the object of this publication. As in other issues the present volume deals with therapeutics, which, curiously enough, is headed "Treatment and Therapeutics," which seems to be a distinction without a difference. Medical, with surgical, topics are next considered, and finally there is a discussion of the progress of medicine during the year 1913, prepared by Dr. Cattell and Dr. Walker and Dr. Samuel L. Wilson. An article of considerable length by Dr. Robert N. Willson deals with the treatment of nephritis. An interesting article is entitled "Immediate Treatment," by Dr. Frescoln, which he defines as the deliberate grasping of a situation and an effort to do something to relieve it. Dr. Verbrycke has an entertaining article entitled "The Ulcer Suspect," referring to gastric ulcer, and Bierring contributes one upon thrombosis and embolism.

A SYNOPSIS OF MEDICAL TREATMENT. By George Cheever Shattuck, M.D. Second Edition, Revised and Enlarged. W. M. Leonard, M.D., Boston, 1914.

When the first edition of this little pocket manual of less than 100 pages appeared some eighteen months ago, we pointed out that it was not intended to be a text-book on Therapeutics, but what its name implies, an indication of the remedies which may be used in the presence of certain symptoms and diseases. So far as it goes, it can be commended. Some of the subjects might be more happily chosen in that they afford a greater field for therapeutic practice and result. Thus, there is little need, in so brief a volume, to consider the therapy of "embolic angina." The number of instances in which a diagnosis of this condition is made before death are very few, and always uncertain, and for this reason the statement made by the author that vasodilators are likely to give little relief is certainly correct, the more so as he states that death may come suddenly at the onset of symptoms. So, too, we disagree with his advice that in angina, due to degenerative processes arising from syphilis, potassium iodide and protiodide of mercury are to be used in moderate doses. Surely the best results will be obtained in pushing these valuable drugs to the limit. Probably the most valuable sentence in the entire book is: "He who masters the use of a few good drugs will succeed better than he who tries many at random."

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., Assisted by L. F. Appleman, M.D. Volume I, March, 1914. Lea & Febiger, Philadelphia, 1914.

As in previous years, this issue of Progressive Medicine contains an article on the surgery of the head and neck by Dr. Charles H. Frazier, Professor of Clinical Surgery in the University of Pennsylvania, whose work upon cerebrospinal surgery is well known. The surgery of the thorax, including diseases of the breast, is discussed by Dr. George P. Müller, and the important topics of infectious diseases, including acute rheumatism, croupous pneumonia, and influenza, contributed by Dr. John Rühräh, of Baltimore, Dr. Floyd M. Crandall summarizes the literature of the past twelve months in diseases of children, Dr. George B. Wood discusses rhinology and laryngology, and Dr. Duell, of New York,

covers otology. It will be remembered that the object of "Progressive Medicine" is to provide a medical story of the advances in medicine and surgery, each collaborator criticizing the contributions of other authors, and adding thereto his personal views, so that the text possesses a double interest.

ANATOMY AND PHYSIOLOGY FOR NURSES. By Amy E. Pope. Illustrated. G. P. Putnam's Sons, New York, 1913. Price $1.75.

Like most books upon similar subjects prepared for nurses by nurses, this book is a summarization of the facts commonly found in text-books provided for medical students. It is designed, of course, to make nurses familiar with anatomical and physiological facts. For our own part we do not see that it is necessary for nurses to have this information, as in their care of a patient under a physician's direction physiological processes and anatomical facts are not essential. Of course, the more information the nurse has, the better she is educated for her career, but we sometimes think that too much attention is being given to the facts which medical men should know and too little attention is given on the part of teachers of nurses to the practical measures which they should employ.

To those who have Nurses' Training Schools in charge and who wish their nurses to have large and adequate knowledge of anatomy and physiology this book can be cordially commended.

A REFERENCE HANDBOOK OF THE MEDICAL AND SURGICAL SCIENCES. By Various Authors. Edited by Albert H. Buck, M.D. Third Edition, Revised and Rewritten, and Edited by Thomas Lathrop Stedman, A.M., M.D. Complete in Eight Volumes. Volume III. Copiously Illustrated. William Wood & Company, New York, 1914. Price in Cloth, $7.00; Leather, $8.00; Half Morocco, $9.00.

Volume III of this well-known work extends from CHL to EMB. There is probably no medical encyclopedia which is half as well known as this one, and there is certainly none which is so complete. The articles are written by men who are well known in their particular departments of medicine and surgery, and are sufficiently detailed to give the ordinary reader all the information that he needs. The illustrations are excellent and the colored diagrams are well executed. We said of an earlier volume that the medical man who possessed this encyclopedia possessed practically all that was needful in the way of a condensed medical library, and the present volume serves to increase our confidence in the correctness of this statement, although it goes without saying that special works are needed for the purpose of obtaining greater details than it is possible for an encyclopedia, which covers the entire realm of medicine, to give.

FORMULAIRE DE THERAPEUTIQUE CLINIQUE. By Dr. L. Pron, with the Collaboration of Dr. A. Cantonnet. Twelfth Edition, Reprinted and Revised. Maloine, Paris, 1914. Price 6 francs.

Dr. Pron, who is a member of the Society of Therapeutics and the Society of Medicine of Paris, has gathered together various formulæ which he, or other clinicians, have found useful in the treatment of different diseases. The arrangement is not alphabetical, but according to the parts of the body which are in need of treatment.

The formulæ are, of course, given in the metric system, and the various preparations are those of the French Codex and not the U. S. Pharmacopœia. As few American physicians read French, the book cannot be expected to have a sale in this country unless it be amongst French-Canadian physicians. who will doubtless find it very useful, the more so as an adequate and copious index is provided.

DEVELOPMENT AND ANATOMY OF THE NASAL ACCESSORY SINUSES IN MAN. By Warren B. Davis, M.D. The W. B. Saunders Company, Philadelphia, 1914.

This essay is based upon 290 lateral sinus walls showing the various stages and types of development of the accessory nasal sinuses from the sixtieth day of fetal life to advanced maturity, and represents work done in Berlin and in the Daniel Baugh Institute of Anatomy of the Jefferson Medical College, Philadelphia. The illustrations are of natural size, as a rule, and careful at-

tention has been given by a trained artist in their detail. The majority of the dissections will be permanently mounted and placed in the museum of the Daniel Baugh Institute of Anatomy. The book possesses distinct value to the trained anatomist and to the rhinologist, and is to be welcomed as a useful contribution to this department of anatomical knowledge.

DEFECTIVE OCULAR MOVEMENTS AND THEIR DIAGNOSIS. By E. and M. Landolt. Translated by Alfred Roemmele, M.B., Ch.B., and Elmore W. Brewerton, F.R.C.S. The Oxford University Press, New York, 1913. Price $2.00.

Two dollars is certainly a large price for a book of less than one hundred pages, even if the text has been prepared by eminent French ophthalmic surgeons, and even if the advice which is given is of the highest type, since much of the information, if not all of it, can be obtained in the standard works devoted to Ophthalmology. The book, of course, possesses interest to two classes of practitioners: First, to the ophthalmic surgeon, and secondly, to the general practitioner, who meets with various disorders resulting from lack of balance of the ocular muscles, which results in what is commonly known as eye-strain. It is needless to state that the text is reliable and is based upon highest authority.

A MANUAL OF INFANTILE PARALYSIS. With Modern Methods of Treatment. By Henry W. Frauenthal, A.C., M.D., and Jacolyn Van Fleet Manning, M.D. Copiously Illustrated. The F. A. Davis Company, Philadelphia, 1914. Price $3.00.

As this manual is based upon the treatment of three thousand cases of infantile paralysis in its epidemic form, it may be considered authoritative. It deals exhaustively with the disease under consideration, with particular reference to the Wisconsin epidemic of 1908. It also discusses the etiology and predisposing causes of poliomyelitis, its pathology, symptomatology, and its treatment, with especial reference to hydrotherapy, electrotherapy, psychotherapy, and chemotherapy; and, last of all, the treatment of deformities resulting from infantile paralysis by surgical measures. There are no less than 128 illustrations.

To those who are called upon to treat this disease, both in its sporadic and epidemic form, the book will prove of great usefulness and benefit.

A HANDBOOK FOR THE POST-MORTEM ROOM. By Alexander G. Gibson, M.D., F.R.C.P. The Oxford University Press, New York, 1914. Price $1.50.

This is a small pocket manual, printed on thin paper, covering 140 pages, which is designed, as its title indicates, to instruct the student and medical graduate in the making of autopsies, either from the standpoint of scientific medicine or for medicolegal information. It is an excellent summarization which will be found most useful by Juniors when they begin their autopsy work.

BIOLOGY: GENERAL AND MEDICAL. By Joseph McFarland, M.D. Second Edition, Thoroughly Revised. Illustrated. W. B. Saunders Company, Philadelphia and London, 1913. Cloth, $1.75 net.

The author has corrected many points and amplified others in this second edition and thus made it an improvement over the first. The book, with its practical application rather than unreasoning adherence to technicalities, is a valuable one for beginners in medicine and for others who wish to review biology from this view-point. It is a very readable book. A. G. E.

PRATYAKSHA-SHÁRIRÁM. A Text-book of Human Anatomy, in Sanskrit, with an English and Sanskrit Introduction Containing a Short History of Ayurvedic Literature. Part I. By Gananath Sen, M.A., L.M.S. Calcutta, 1913.

Needless to say that it is quite impossible for us to review this volume, the text of which is in Sanskrit. The book is prepared because the author thought that there was a distinct need for a descriptive anatomy in that language. Judging from the cuts which are employed to illustrate the text, it is largely based upon Gray's Anatomy. The Preface not only tells us of the objects of the author, but is also in the nature of a historic summary which covers a considerable number of pages.

THE PRACTICAL MEDICINE SERIES. Under the Editorial Charge of Charles L. Mix, A.M., M.D. Volume X. Nervous and Mental Diseases. Edited by Hugh T. Patrick, M.D., and Peter Bassoe, M.D. Series of 1913. The Year-Book Publishers, Chicago, 1914. Price $1.35.

In previous years we have taken pleasure in referring to this summary of neurological literature, prepared by Dr. Patrick and his assistant. It is a useful compilation, presented in brief form, for the general practitioner as well as the neurologist.

THE ANATOMIST'S NOTE-BOOK. By A. Melville Paterson, M.D. Edin., F.R.C.S. Eng. Henry Frowde, Oxford University Press, London, 1914. Price $2.00.

This is essentially a dissection guide and is in no way intended to replace systematic text-books on anatomy. There are a few illustrations, namely, in the shape of line drawings. The book begins with a general table having reference to the position of the body and the sequence of regions dissected. Thereafter directions are given for regional dissections in a thoroughly orderly manner. The arrangement seems admirably designed to be a real and practical help to the student not only in preparation for examination, but in visually memorizing positions and relations which will be serviceable to him in his future work.

THE ELEMENTS OF BANDAGING AND THE TREATMENT OF FRACTURES AND DISLOCATIONS. By William Rankin, M.A., M.B., Ch.B. Illustrated. Price $1.50. Henry Frowde, Oxford University Press, London, 1913.

This brochure, well illustrated, printed in large type and upon excellent paper, is based upon demonstrations given to students preparing for the practical portion of their final examination, and deals essentially with details which are not handily found in most text-books. Every procedure and method described is one which has proved most satisfactory in practice. The author states that but few bad results will have to be deplored where cases are treated as laid down in his book. There is no pretence at systematic consideration of the subject-matter. The advice given as to treatment is in the main modern and in accordance with the best practices. This is a useful book for the general practitioner, the student, or the house surgeon.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

The Medical Department of Cambridge University has just come to an important decision with regard to its future administration and upkeep. For some time past it has been realized that the department was in serious need of larger funds with which it could grapple with the ever-increasing demands upon its resources. The question therefore arose of seeking monetary aid from the Board of Education, which gives grants to practically every other university, and even in Cambridge itself, as two other departments receive government grants. On the other side, a strong party urged that government grants meant government inspection, and the fear was expressed that this inspection might prove irksome and extend far beyond the Medical School. The opponents to government aid believe that the position of university education in Cambridge will be endangered by accepting grants, as they fear that the Board of Education will be able to force their views upon the university, and as the board is subject to Parliamentary control, undue pressure might be brought to bear by members of the House of Commons. After warm discussion the matter has been settled by a vote of all the members of the university, for every master of arts on the roll of the university is entitled to a vote on a question of this sort. The motion in favor of applying for a grant was carried by a small majority, and the Board of Education will probably allot nearly £5000 a year to the

department. This sum ought to greatly increase its usefulness, and Cambridge will probably become, in the future, a place of complete medical instruction, instead of only teaching the preliminary and intermediate subjects, as at the present time.

A new expedition has been despatched to China to carry out researches on certain tropical diseases. The party has been organized by the London School of Tropical Medicine, assisted by the colonial office and the admiralty. Dr. Leiper, the helminthologist at the school, is the leader, and he will be assisted by Surgeon Atkinson and Mr. Cherry-Jarrard, both of whom were members of the Scott Antarctic expedition. The object of the expedition is to ascertain the mode of spread of trematode diseases, more especially bilharziasis and ankylostomiasis. These two diseases have caused a great mortality among the coolies on the tea and rubber estates, and the United States Rubber Company have offered facilities for the study of tropical problems on their Sumatra estates. So far all attempts have failed to find out the exact mode of infection of bilharziasis, and if this one thing can be discovered a great deal will have been accomplished. The expedition will proceed first to China, to the valley of the Blue River, where a floating laboratory will be established on the canals, and afterward visits will be paid to Hong Kong and other parts of the country.

A long delayed reform is about to be carried out by the London County Council, by the establishment of a street ambulance service. This subject has been under discussion for many years, as far back as the year 1880. The new scheme adopted is of a tentative nature and will probably need considerable enlargement as further experience is gained. From the statistics at present available, it is estimated that the number of calls for ambulances will be about 30,000 per annum. This applies to the County of London, excluding the city, which has its own service. The service will be under the control of the chief officer of the Fire Brigade, and six district stations will be provided, three on the north and three on the south side of the Thames. Each station will be provided with a motor ambulance, except Shoreditch, which will have two, owing to the large number of accidents in that district. Each call for an ambulance will be sent by telephone to a central station, from which it will be transmitted to the district station nearest the site of the accident. This service will be available for all cases of accident and illness in the streets, also for accidents in factories and private houses. It remains to be seen if the telephone facilities will be sufficient to meet the needs of the service, or if a system of street call-boxes would be desirable. A number of police telephones placed in kiosks at important traffic centers will probably be found necessary, and in outlying districts the premises of private telephone subscribers who are willing to allow their instruments to be used for ambulance calls will be marked by a small indicator or plate. The annual cost of maintenance of the scheme will probably work out at about £10,000 per annum.

The Annual Report on Public Health of the London County Council demonstrates the fact that there is a remarkable parallel in the seasonal prevalence of scarlet fever and fleas. Both show a great increase during late summer and autumn, and a rapid decrease toward the end of the year. This observation may throw a new light on the transmission of epidemic diseases in this country, where little work has been done on the question of insect carriers. If the investigation of this point throws further light upon the obscure problem of the true nature of measles and other infective epidemic diseases, a great effort will have to be made to secure the efficient cleansing of all "verminous" children. The annual report stated that about 30 per cent of the London schoolgirls examined in 1911 were classed as "verminous." At the present time the cleansing of verminous children can only be carried out by consent.

The question of the conveyance of tuberculosis by milk is one that has received

lately a great deal of attention, and has aroused wide-spread interest. The discussion arose from Mr. Robert Mond's statement that a series of experiments had led him to the conclusion that tuberculosis could not be conveyed by milk, and that it was much better from the point of view of nutrition not to give children boiled milk. Other authorities are strongly of the opinion that tuberculosis of the bones, joints, glands, etc., can be caused by the bovine bacillus. There is no doubt that the whole question of the milk supply for London requires a thorough investigation, and that milk sold in the best class shops is far from being ordinarily clean. It is said that 10 per cent of all milk entering London is infected with the bovine tubercle bacillus, and that the greater part of the milk supply is colored with annatto to give it a rich appearance. Scarcely any dairy reaches the standard of cleanliness set by New York—*i.e.*, that certified milk should not contain more than 10,000 bacteria per Cc. An independent investigation of the milk sold by some of the better class dairies in the west end of London showed an average bacterial content nearer 3,000,000 per Cc., and several samples of "nursery" milk, sold at an enhanced price, were found to contain more bacteria per Cc. than the ordinary milk sold at the same depots. In connection with this difficulty in procuring a pure milk supply, it is interesting to note that the production of synthetic milk on a commercial scale is promised in the near future. The discovery was announced some two years ago, but there were difficulties in producing a really fine emulsion. These difficulties have now been removed, and the new fluid is said to be identical in appearance with rich cow's milk and almost identical in taste. The milk is made from the casein contained in the soy-bean, and to this basis fatty acids, sugars, and salts are added in the right proportion and emulsification carried out. If the nutritive value of the new milk can be proved, it should become a great boon to the poor, as it can be produced more cheaply than ordinary milk, and will also be free from all suspicion of being contaminated with infectious matter.

Leave has been obtained in the House of Commons to introduce a bill for the state registration of nurses. Leave was granted by a large majority, though a considerable amount of opposition to the principle of the bill was expressed. When the actual measure comes up for discussion there is sure to be a great deal of controversy, as the proposal to institute a state registration is warmly opposed by many of the large hospitals, notably the London Hospital, which in addition to its ordinary hospital staff runs a very large nursing home to supply the needs of private cases, and so will be largely affected by any change in existing conditions.

Surgeon-General Gorgas has just arrived in this country, and a dinner in his honor has been arranged for next week. The magnitude of the work he has accomplished in the Panama region is fully appreciated by the profession here, more especially by those members who have had to deal with similar problems in our eastern possessions. We hope that equally successful results will follow his recent investigation into the sanitary conditions on the South African Rand, where pneumonia has been extremely prevalent among the native mine workers. We feel that it is an honor to entertain the man who has raised so enormously the value of scientific hygiene.